SUZUKI

GSF1200A/SA

SUPPLEMENTARY SERVICE MANUAL

USE THIS MANUAL WITH:
GSF1200/S SERVICE MANUAL (99500-39280-01E)

SAMPLE

99501-39570-01E

GSF1200AK6/SAK6 ('06-MODEL)

This manual describes ABS service data, ABS specifications and ABS servicing procedures which differ from those of the GSF1200K6/SK6 ('06-model).

NOTE:
- *Any differences between the GSF1200K6/SK6 ('06-model) and GSF1200AK6/SAK6 ('06-model) in specifications and service data are indicated with an asterisk mark (*).*
- *Please refer to the GSF1200K6/SK6 ('06-model) service manual service information for details which are not given in this manual.*

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GSF1200AK6/SAK6 ('06-MODEL)

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SAMPLE

COUNTRY AND AREA CODES

The following codes stand for the applicable country(-ies) and area(-s).

CODE	COUNTRY or AREA	EFFECTIVE FRAME NO.
E-02 (GSF1200A)	U.K.	JS1CB114200100001 –
E-02 (GSF1200SA)	U.K.	JS1CB113200100001 –
E-19 (GSF1200A)	E.U.	JS1CB114100100001 –
E-19 (GSF1200SA)	E.U.	JS1CB113100100001 –
E-28 (GSF1200SA)	Canada	JS1GV79B 62100001 –

SPECIFICATIONS

DIMENSIONS AND DRY MASS

Overall length		2 130 mm (83.9 in)	
Overall width		790 mm (31.1 in)	
Overall height		1 095 mm (43.1 in)	GSF1200A
		1 235 mm (48.6 in)	GSF1200SA
Wheelbase		1 480 mm (58.3 in)	
Ground clearance		135 mm (5.3 in)	
Seat height		785 (30.9 in)/805 mm (31.7 in)	Low/High
Dry mass	*	216 kg (476 lbs)	GSF1200A
	*	219 kg (482 lbs)	GSF1200SA

ENGINE

Type	Four-stroke, air-cooled, DOHC
Number of cylinders	4
Bore	79.0 mm (3.110 in)
Stroke	59.0 mm (2.323 in)
Displacement	1 157 cm^3 (70.6 cu.in)
Compression ratio	9.5 : 1
Carburetor	MIKUNI BSR36
Air cleaner	Non-woven fabric element
Starter system	Electric
Lubrication system	Wet sump
Idle speed	1 300 ± 100 r/min ... E-03, 28, 33
	1 200 ± 100 r/min ... Others

SAMPLE

DRIVE TRAIN

Clutch		Wet multi-plate type
Transmission		5-speed constant mesh
Gearshift pattern		1-down, 4-up
Primary reduction ratio		1.565 (72/46)
Gear ratios,	Low	2.384 (31/13)
	2nd	1.631 (31/19)
	3rd	1.250 (25/20)
	4th	1.045 (23/22)
	Top	0.913 (21/23)
Final reduction ratio		3.000 (45/15)
Drive chain		RK GB50GSVZ3, 116 links

CHASSIS

Front suspension	Telescopic, coil spring, oil damped
Rear suspension	Link type, coil spring, oil damped
Front suspension stroke	130 mm (5.1 in)
Rear wheel travel	136 mm (5.4 in)
Caster	25° 20'
Trail	104 mm (4.10 in)
Steering angle	35° (right & left)
Turning radius	2.8 m (9.2 ft)
Front brake	Disc brake, twin
Rear brake	Disc brake
Front tire size	120/70ZR17M/C (58W), tubeless
Rear tire size	180/55ZR17M/C (73W), tubeless

ELECTRICAL

Ignition type	Electronic ignition (Transistorized)	
Ignition timing	7° B.T.D.C. at 1 300 r/min	E-03, 28, 33
	7° B.T.D.C. at 1 200 r/min	Others
Spark plug	NGK JR9B	
Battery	12 V 36 kC (10 Ah)/10 HR	
Generator	Three-phase A.C. generator	
Main fuse	30 A	
Fuse *	10/10/15/15/15/10 A	
Headlight	12 V 60/55 W (H4)	GSF1200A
	12 V 55 W (H7) + 12 V 55 W (H7)	GSF1200SA
Parking or city light	12 V 5 W	GSF1200A
	12 V 5 W × 2	GSF1200SA
Turn signal light	12 V 21 W	
Brake light/Taillight	12 V 21/5 W	
Licence plate light	12 V 5 W	
Speedometer light	LED	
Tachometer light	LED	
Neutral indicator light	LED	
High beam indicator light	LED	
Turn signal indicator light	LED	
Oil pressure indicator light	LED	
ABS indicator light *	LED	

SAMPLE

CAPACITIES

Fuel tank		20.0 L (5.3/4.4 US/Imp gal)
Engine oil,	oil change	3 300 ml (3.4/2.9 US/Imp qt)
	with filter change	3 500 ml (3.6/3.0 US/Imp qt)
	overhaul	4 600 ml (4.9/4.0 US/Imp qt)

These specifications are subject to change without notice.

INTRODUCTION

ABS (Anti-lock Brake System)

This system not only prevents the wheels from locking while braking, but also provides more stable braking by controlling the wheel speed so as to maximize the friction between the tires and road surface. If the wheels lock up, the motorcycle cannot be steered and may fall over. If this occurs on a slippery road that has surface with a low friction coefficient, such as on a wet or gravel-covered road, it is very difficult even a skilled rider to determine the braking efficiency correctly.

This system monitors the wheel speed and controls the braking force even while ridding on slippery roads or when braking suddenly during an emergency. The main components of this ABS are: the front and rear wheel speed sensors, and ABS control unit/hydraulic unit (HU) that are combined into one. These components work together to optimize braking.

Wheel Speed Sensor	Measures the wheel speed.

⬇

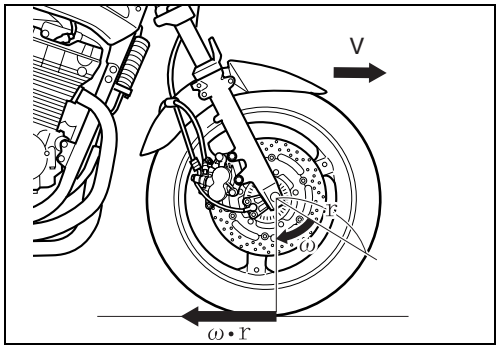
ABS control unit	Calculates the ideal wheel speed from the measured wheel speed and commands the HU to decrease, increase and maintain the brake fluid pressure.
Hydraulic Unit (HU)	Decreases, increases and maintains the brake fluid pressure according to the ABS control unit.

SAMPLE

BASIC ABS PRINCIPLES

In order to understand the operation of the ABS, it is necessary to understand the movement and characteristics of the motorcycle and its wheels, during braking. The necessary terminology and theory are explained below.

SLIP RATIO



While the motorcycle speed is constant, the wheel speed is equal to the motorcycle speed. However, applying the brakes adds a braking torque which decreases the wheel speed, resulting in a difference between the wheel speed and the motorcycle speed. This causes slipping between the tire and the road surface. The slip ratio is defined as the difference between the motorcycle speed and the wheel speed, divided by the motorcycle speed and expressed in percents. The slip ratio (λ) is therefore expressed as follows:

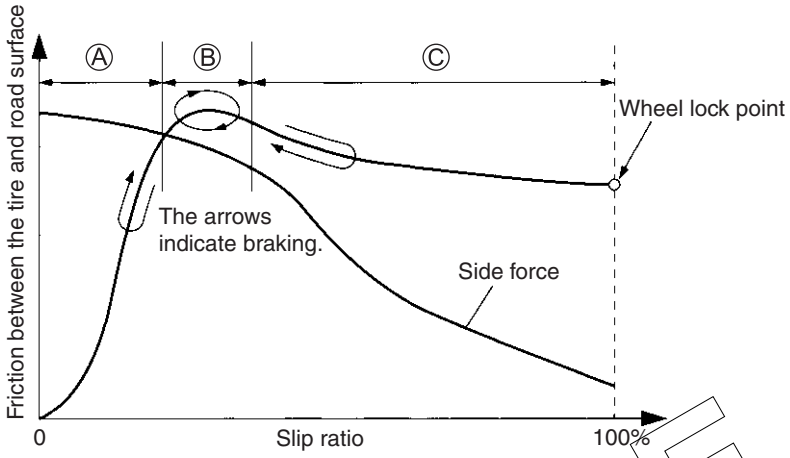
$\lambda = (V - Vw) / V \times 100\ (\%)$ . . ①
$Vw = \omega \cdot r$. . . . . ②
From ① and ②:
$\lambda = (V - \omega \cdot r) / V \times 100\ (\%)$

λ : Slip ratio
V : Motorcycle speed
Vw: Wheel speed
ω : Angular velocity
r : Wheel radius

RELATIONSHIP BETWEEN THE SLIP RATIO, SIDE FORCE AND THE FRICTION BETWEEN THE TIRE AND ROAD SURFACE

The relationship between the slip ratio, side force and the friction between the tire and road surface are shown in the following graph.

* "Side force" is the supporting force on the sides of the motorcycle.



Friction between the tire and road surface is generally at its maximum when the slip ratio is within section Ⓑ and the friction becomes lowered when the wheel is locked (100% slip ratio). In addition, since braking reduces the side force, suddenly braking when there is a large slip ratio reduces the supporting force on the sides of the motorcycle and decreases the motorcycle's stability. The above graph shows that optimal braking occurs within section Ⓑ, where the friction between the tire and road surface is maximum and the side force is not significantly reduced.

SAMPLE

OPTIMAL CONTROL

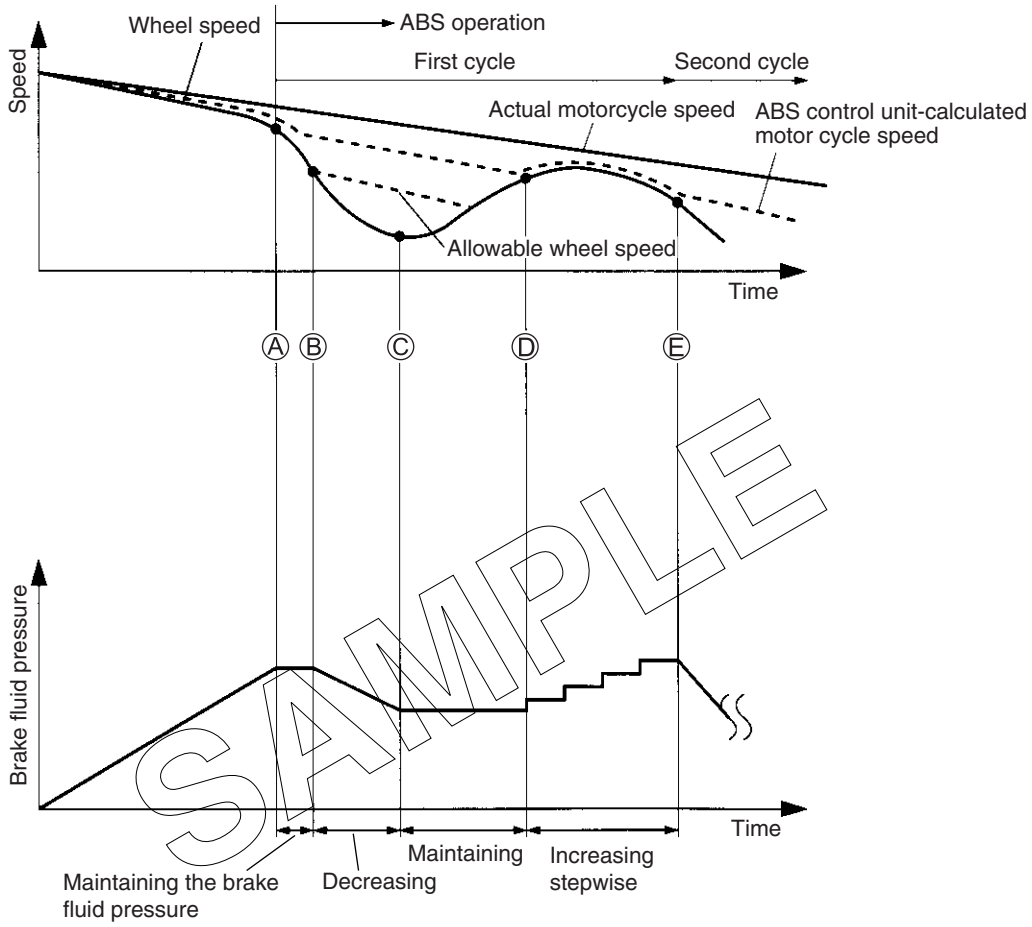
The brake fluid pressure is adjusted to provide the proper braking force.

While the slip ratio is within section Ⓑ, the brake fluid pressure is slightly increased, decreased or maintained. If the slip ratio enters section Ⓒ due to changes in road conditions, the brake fluid pressure is quickly decreased so that the slip ratio returns to section Ⓑ. If the slip ratio enters section Ⓐ, the brake fluid pressure is quickly increased so that the slip ratio returns to section Ⓑ.

It is very difficult for a person to make these types of adjustments quickly and accurately. The ABS, which is a control system that uses electrical and hydraulic technology, makes these adjustments automatically to provide the ideal braking force.

ABS CONTROL CYCLE

In order to understand the ABS control cycle, it is necessary to understand the normal control cycle on a well-gripped road. The ABS control flows at various wheel speeds and brake fluid pressure changes as shown in the following graph.



SAMPLE

Ⓐ When the brakes are suddenly applied, the brake fluid pressure is maintained in order to determine the change in wheel speed.

Ⓑ When the wheel speed keeps decreasing and the wheels are almost locking, the brake fluid pressure is decreased.

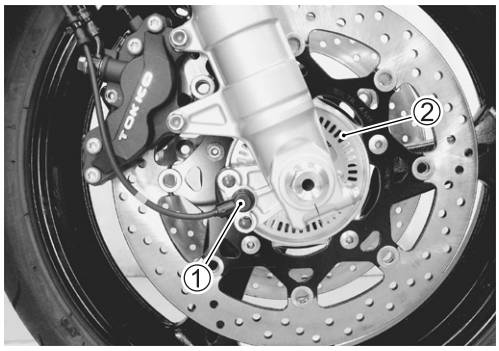
Ⓒ When the wheel speed increases and prevents the wheels from locking, the brake fluid pressure is maintained in order to maintain the braking force.

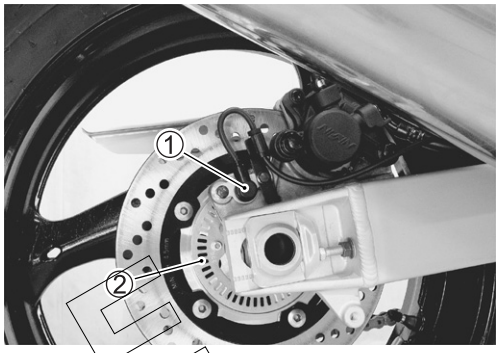
Ⓓ When increasing road surface friction forces cause the wheel speed to increase, the brake fluid pressure is increased gradually.

Ⓔ When the wheel speed is again decreased, the brake fluid pressure is decreased.

FRONT AND REAR WHEEL SPEED SENSORS

Wheel speed sensor consists of wheel speed sensor ① and sensor rotor ②.

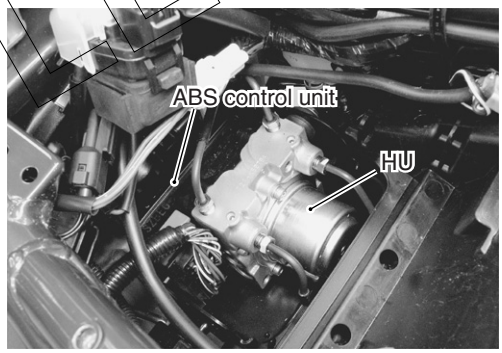




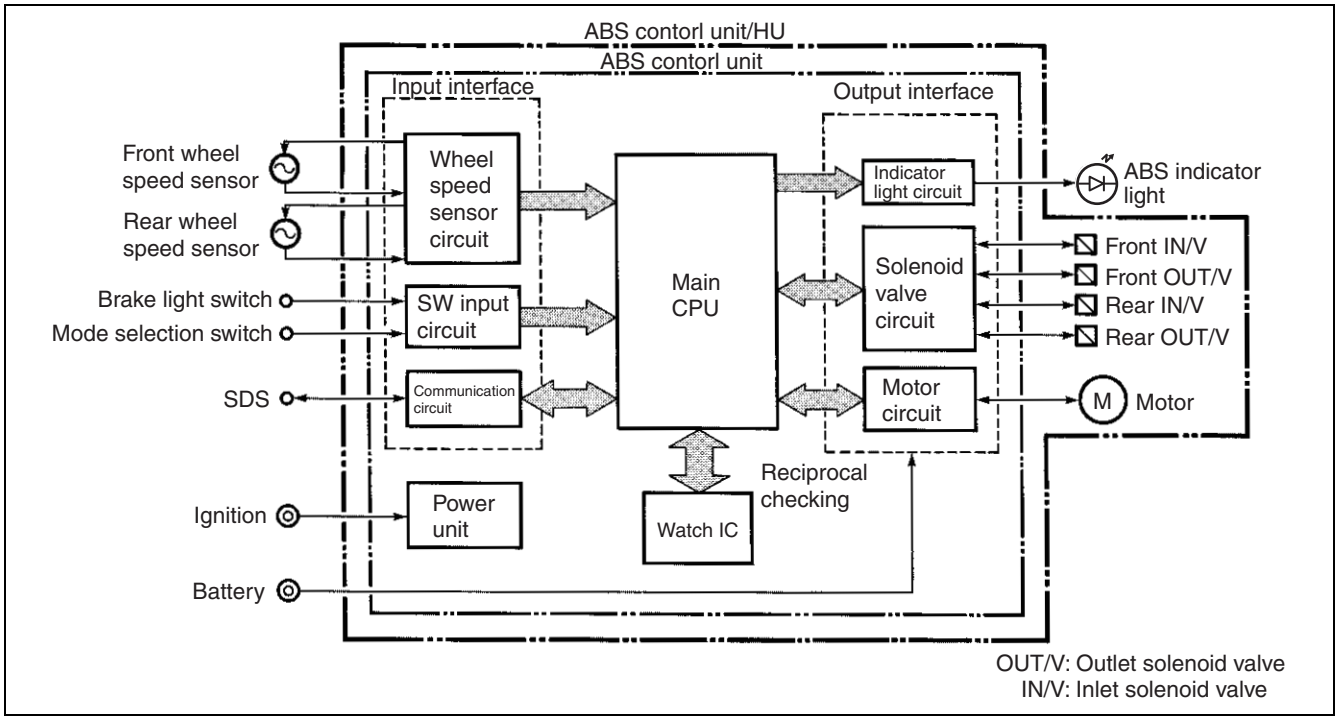
ABS CONTROL UNIT

ABS control unit calculates signals input from each one of front and rear wheel speed sensors, monitors the slipping conditions of the wheels and, at the same time, sends control signal to Hydraulic Unit (HU).

This ABS control unit/HU can not be disassembled.

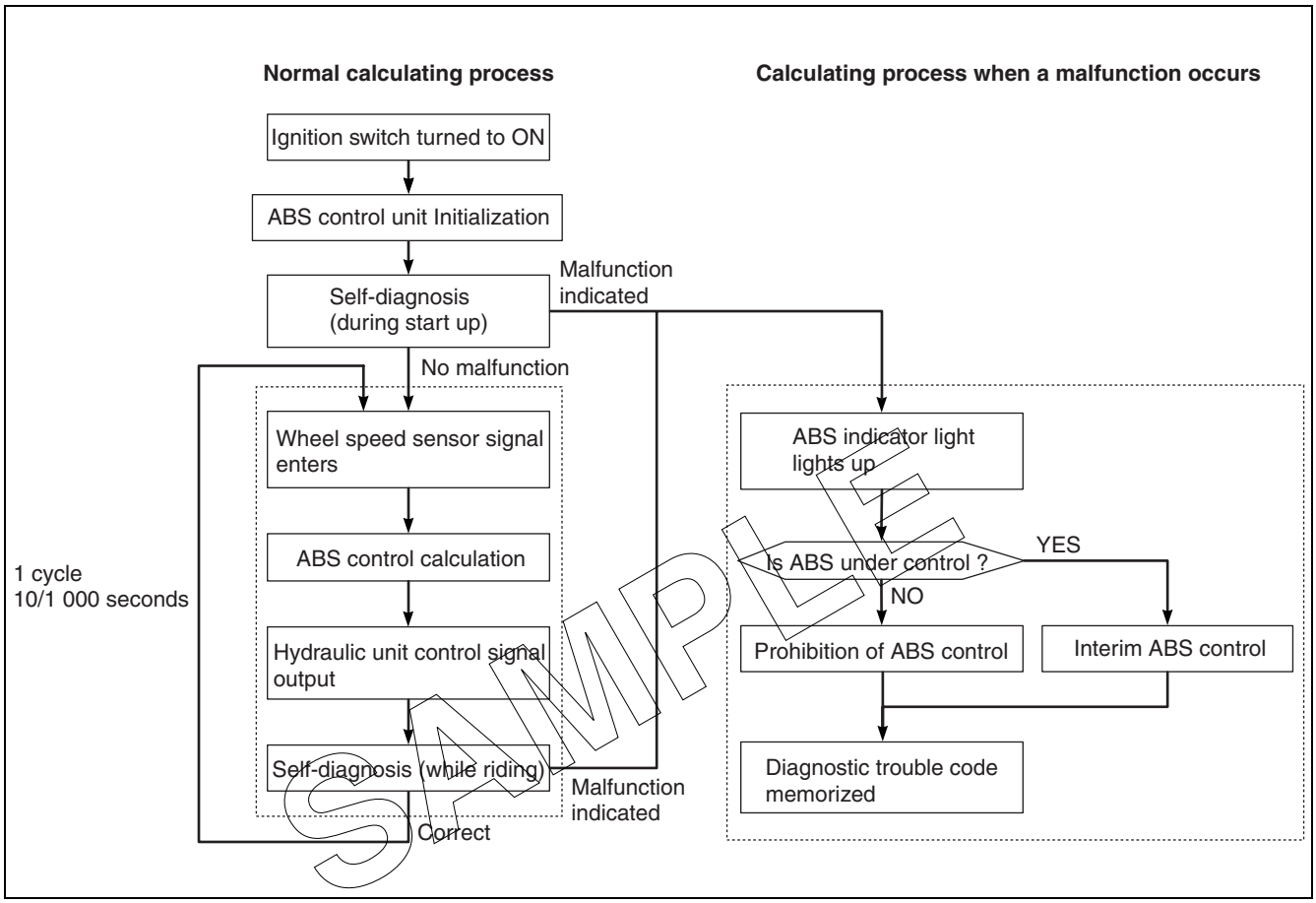


SAMPLE



ABS CONTROL UNIT CALCULATING PROCESS

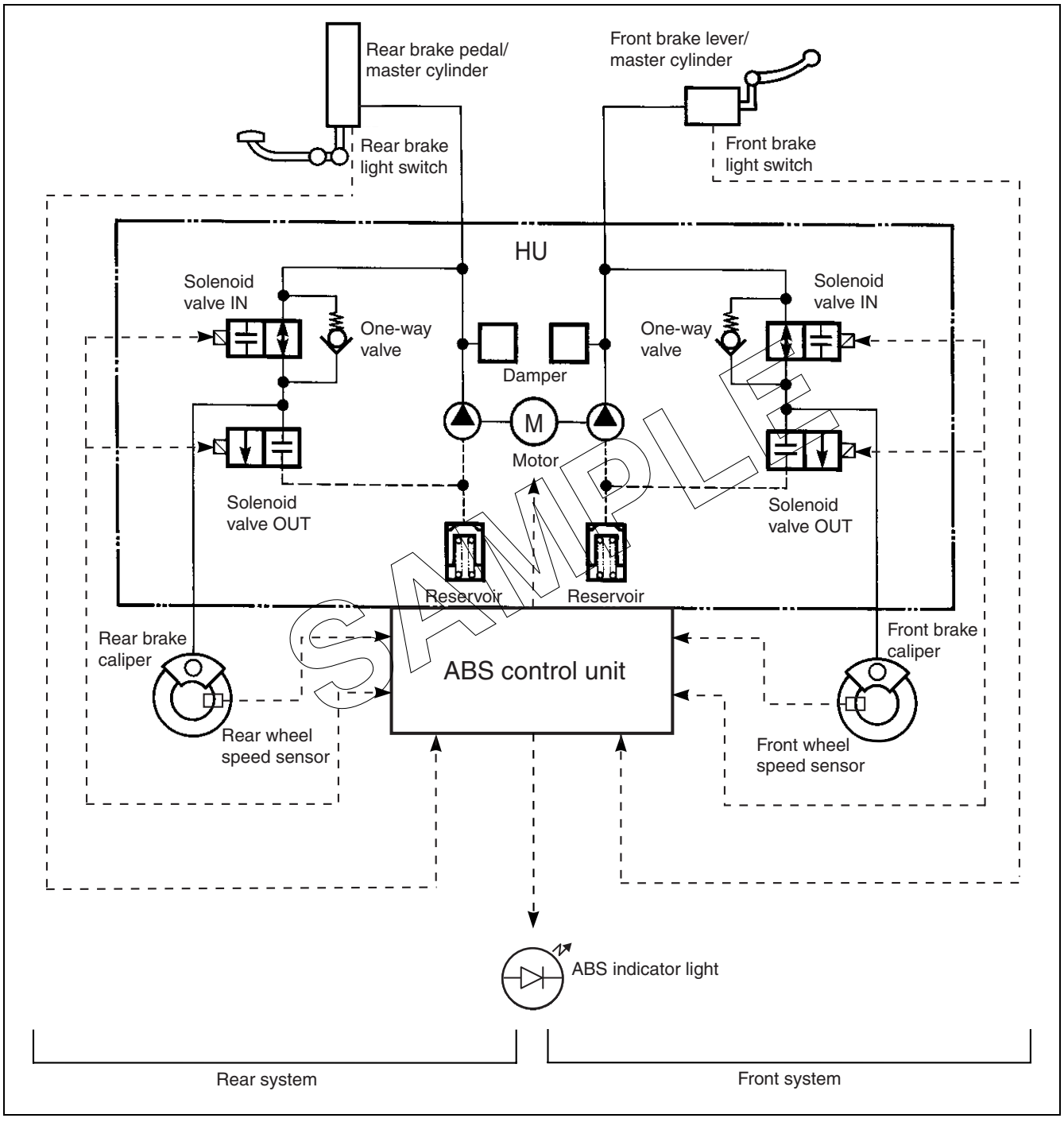
The ABS controls and its calculations, in addition to the self-diagnosing and the fail-safe processes, occur during the ABS control unit calculating process. ABS control is performed in one cycle every 10/1 000 seconds. In addition, if a malfunction is detected by the self-diagnosis function, the brake stops being controlled by the ABS and a diagnostic trouble code is stored.



SAMPLE

HYDRAULIC UNIT (HU)

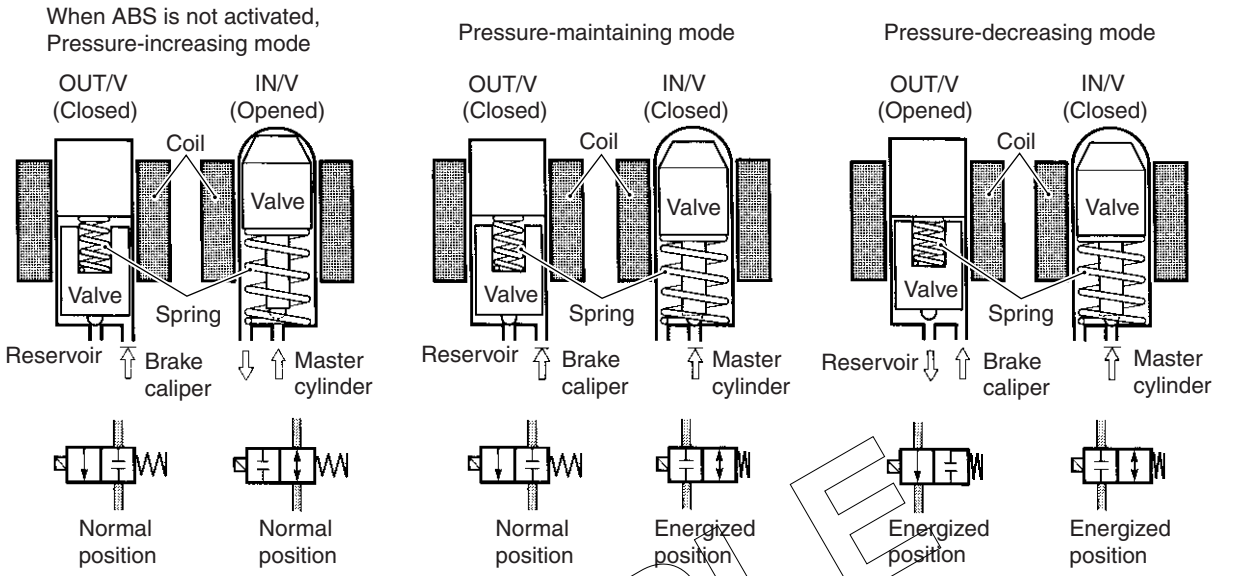
The hydraulic unit operates the solenoid valves based upon the signal which is output from the ABS control unit. The brake fluid pressure is then adjusted accordingly. The hydraulic unit controls the front and rear brake systems individually by operating separate components for the front and the rear, except for the pump drive motor, which is shared by both systems.



SAMPLE

HYDRAULIC UNIT SOLENOID VALVES (INLET/OUTLET)

The solenoid valves switch the brake fluid circuit to one of three positions (increasing, decreasing and maintaining pressure) according to the signal that is output from the ABS control unit. As the ABS control unit energize the coil, the valve compresses its spring and open/close the circuit.



SAMPLE

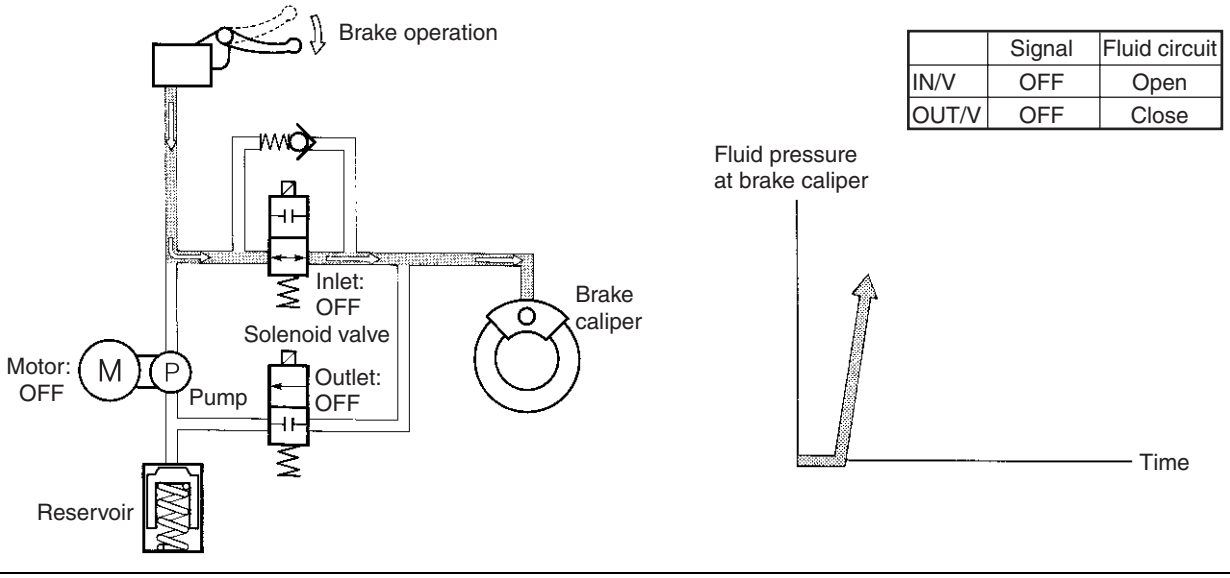
PRESSURIZED BRAKE FLUID CIRCUIT

The brake fluid circuit of the ABS is divided into two systems: one for the front wheel and one for the rear wheel. Both the front and rear brake systems are the same.

WHEN NOT OPERATING THE ABS (WHEN THE ABS IS NOT ACTIVATED OR AN ABS MALFUNCTION HAS OCCURRED)

Brake fluid pressure-increasing mode

When the ABS is not activated, the solenoid valve coils are not energized (no signal is sent from the ABS control unit). In this case, the inlet valve is open and the outlet valve is closed. The pressurized brake fluid travels from the master cylinder to the brake caliper through the opened inlet valve.

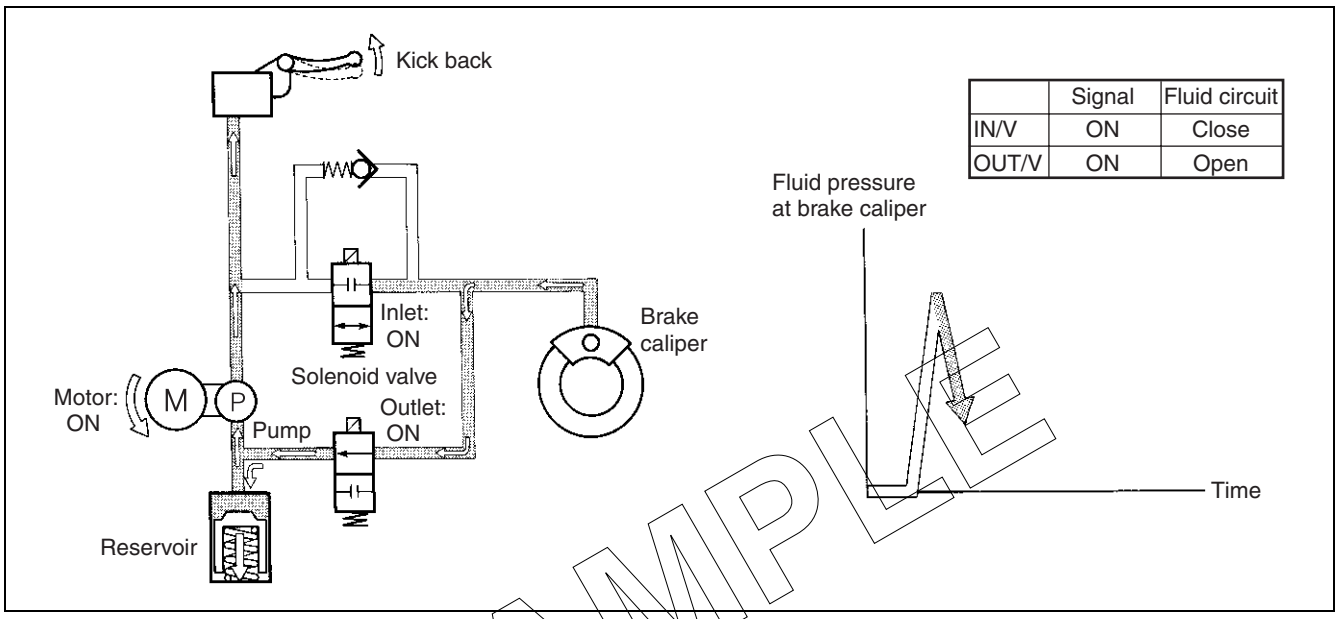


	Signal	Fluid circuit
IN/V	OFF	Open
OUT/V	OFF	Close

WHEN OPERATING THE ABS

Brake fluid pressure-decreasing mode

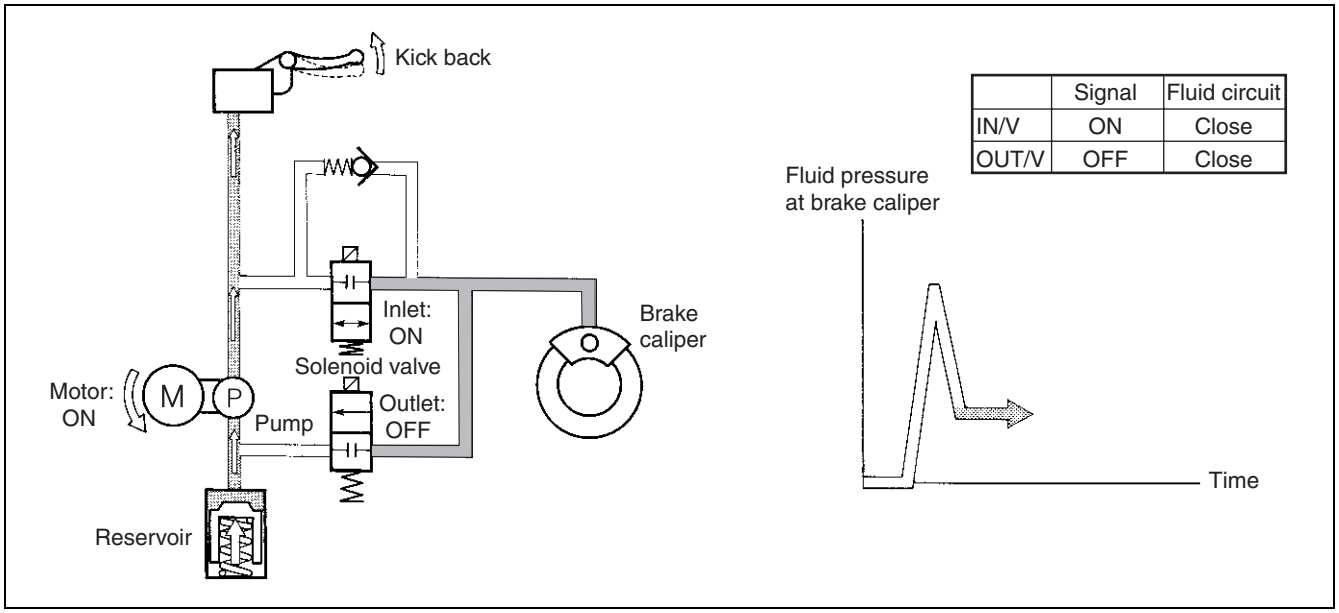
If the slip ratio exceeds the set value, or if a decrease of brake fluid pressure does not accelerate the wheel to the set speed, high enough for the brake fluid pressure to be maintained constant, the ABS will lower the brake fluid pressure to prevent the wheels from locking. At this time, the ABS control unit outputs the signal to decrease the pressure. The solenoid valve coils are energized, close the inlet valve and open the outlet valve. The brake fluid in the calipers flows through the outlet valve, pooled in the reservoir and then pumped back to the master cylinder.



	Signal	Fluid circuit
IN/V	ON	Close
OUT/V	ON	Open

Brake fluid pressure-maintaining mode

If the braking or accelerating wheel speed exceeds the set value, the ABS temporarily maintains the proper brake fluid pressure, regardless of whether there is a pressure increasing in the master cylinder. The ABS control unit then outputs the signal to maintain the pressure, causing the inlet valve coil to be energized and closing each valve. The master cylinder, brake calipers and reservoir are shut off, then the brake fluid pressure at the calipers are maintained.

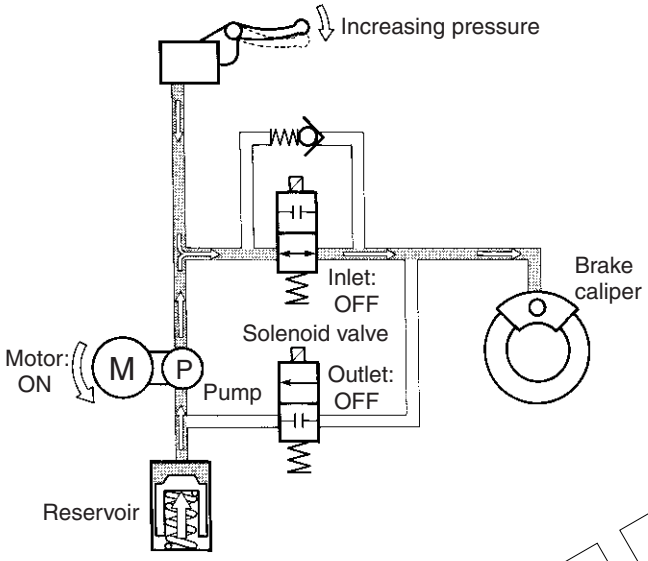


	Signal	Fluid circuit
IN/V	ON	Close
OUT/V	OFF	Close

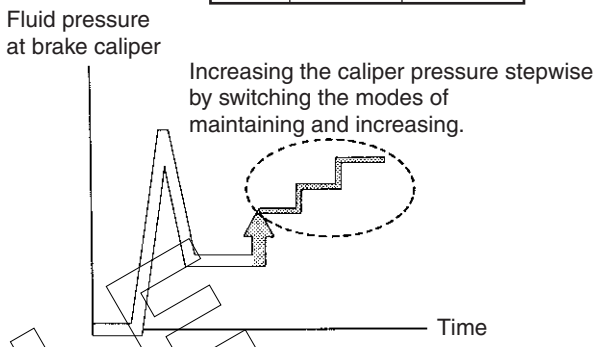
SAMPLE

Brake fluid pressure-increasing mode

If the accelerating wheel speed exceeds the set value, the ABS increases the pressure. At this time, the ABS control unit outputs the signal to stop the solenoid valve coils from being energized, opening the inlet valve and closing the outlet valve, and sending the pressurized brake fluid from the master cylinder to the brake caliper. In addition, during a step wise brake fluid pressure increase, the mode switches between the pressure-maintaining and pressure-increasing modes.



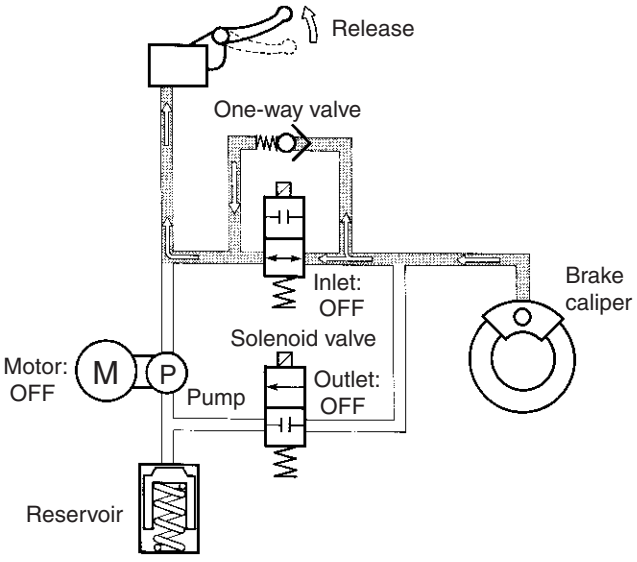
	Signal	Fluid circuit
IN/V	OFF	Open
OUT/V	OFF	Close



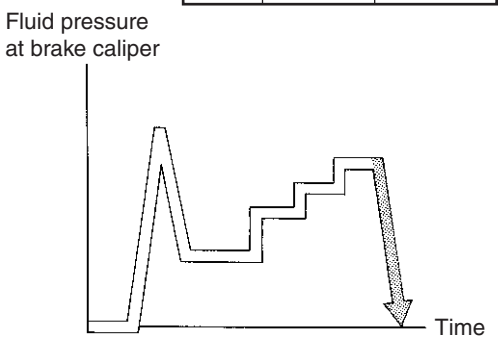
WHEN NOT OPERATING THE ABS (WHEN THE ABS IS NOT ACTIVATED OR AN ABS MALFUNCTION HAS OCCURRED)

Brake fluid pressure-decreasing mode

For releasing the brakes when ABS is not activated, since no signals are output from ABS control unit, this opens the inlet solenoid valve (normal position) and closes the outlet solenoid valve (normal position). Then, fluid within the brake caliper will return to master cylinder passing through one-way valve which is opened by the inlet solenoid valve and fluid pressure.



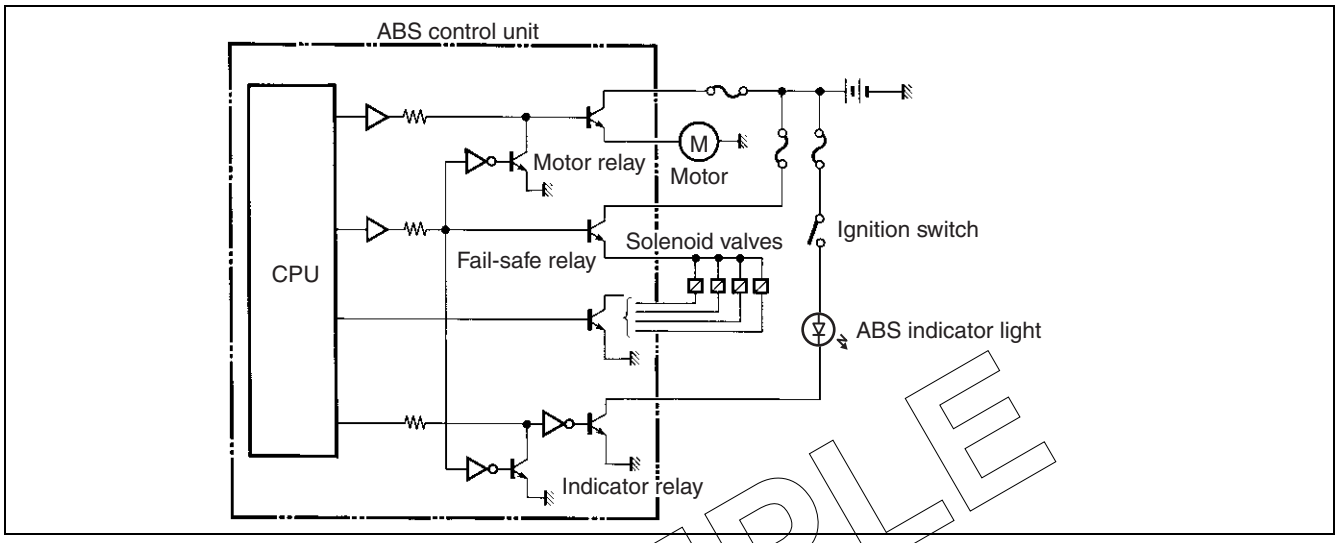
	Signal	Fluid circuit
IN/V	OFF	Open
OUT/V	OFF	Close



SAMPLE

FAIL-SAFE FUNCTION

If malfunction occurs in the ABS electric system, this sets fail-safe relay OFF. Consequently, motor relay will be set OFF and the indicator light ON, and no current will be applied to motor solenoid valve inactivating ABS and turning ABS indicator light ON. In this case, it functions as the normal brake. However, if malfunctions occurs while ABS is being activated, when ABS control unit diagnoses that the operation can continue, it will effectuate ABS provisional control (turning the ABS indicator light ON). Upon the moment when ABS provisional control is over, the fail-safe relay will be set OFF.



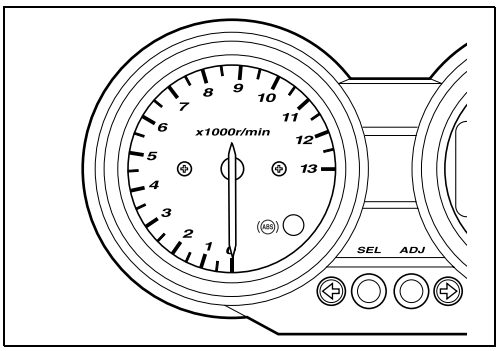
SAMPLE

SELF-DIAGNOSIS FUNCTION AND ABS INDICATOR LIGHT

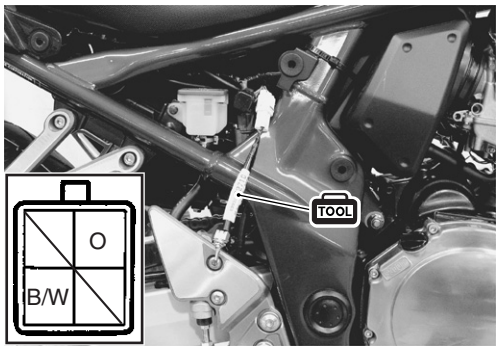
The ABS control unit performs the self-diagnosis and can store any electronically detected malfunctions as diagnostic trouble codes. If a malfunction has occurred, the indicator light lights up to inform the rider of the malfunction. The special tool, when connected to the mode select coupler, enables the ABS indicator light to display the diagnostic trouble codes.

ABS INDICATOR LIGHT

The ABS indicator light informs the rider of any ABS malfunctions. If a malfunction occurred, the ABS indicator light flashes, during the self-diagnosis, to indicate the diagnostic trouble code so that the correct part can be repaired.



- When the ignition switch is turned to ON, the ABS indicator light lights up even if no malfunction has occurred, to indicate that the bulb is not burnt out. It will go off after the motorcycle is ridden at more than 10 km/h (6.2 mile/h).
- If an ABS malfunction has occurred, the ABS indicator light keeps lighting up.
- When a malfunction has occurred in the ABS, connect the special tool to the mode select coupler to display the diagnostic trouble code on the ABS indicator light. (☞Page 32)



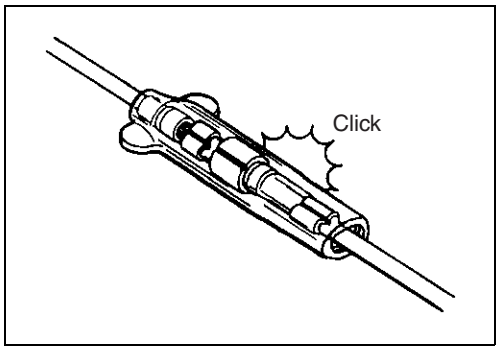
TOOL 09930-82710: Mode select switch

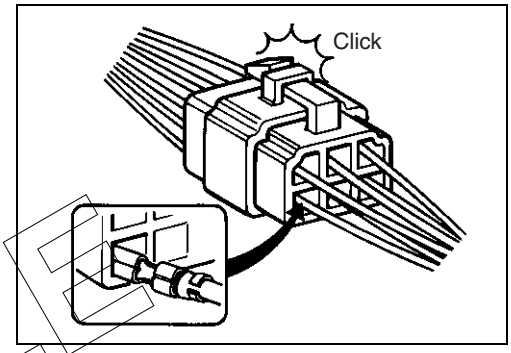
CAUTIONS IN SERVICING

ABS WIRING

- The ABS parts are connected to various lead wires. The coupler and lead wire connections, as well as the lead wire and wire harness routings must be done correctly. Make sure that the proper clamps are used and positioned correctly.

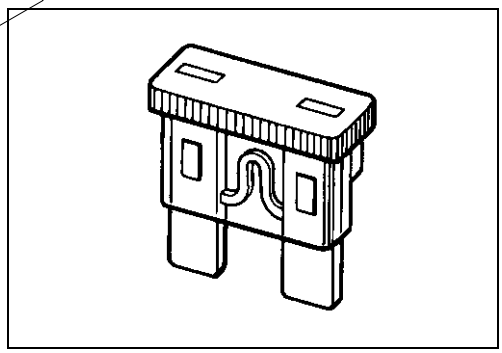
NOTE:
If all of the connections are not properly connected, the ABS may not operate correctly. For connector and coupler precautions. (☞*GSF1200K6/SK6 00-2*)





FUSES

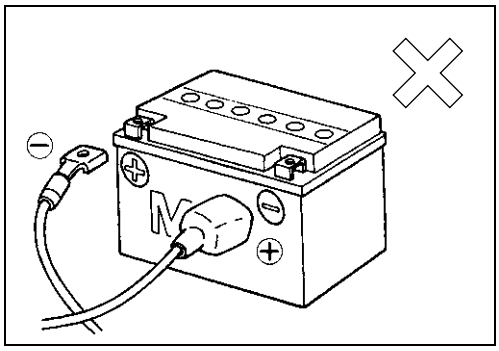
- If a fuse is blown, find the cause of the problem and correct it before replacing the fuse.
- Only use a fuse of the specified rating.
- Never improvise when replacing a fuse.



BATTERY

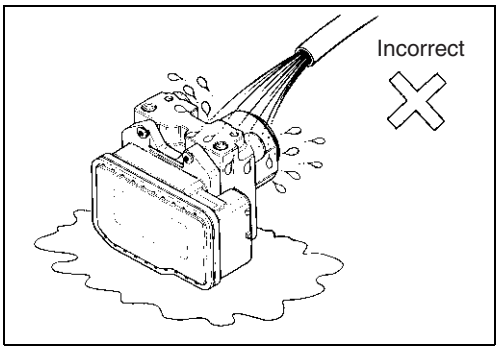
- Only use a fully charged battery.
- In order to prevent damage to the ABS control unit etc., be sure to connect the battery properly.
- Never disconnect the battery or any other lead wires while the engine is running.

NOTE:
For battery and battery connection precautions.
(☞*GSF1200K6/SK6 00-4*)

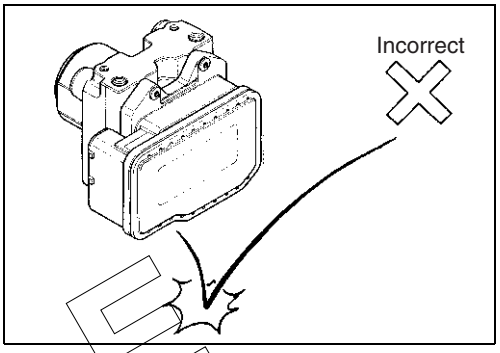


SAMPLE

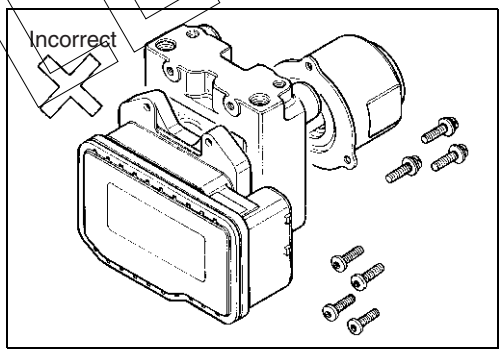
ABS CONTROL UNIT/HU



- Never allow dust or water to contact the ABS control unit/HU.



- Never subject the ABS control unit/HU to strong impacts or allow them to be dropped.



- The ABS control unit/HU cannot be disassembled. Replace the whole unit with a new one.

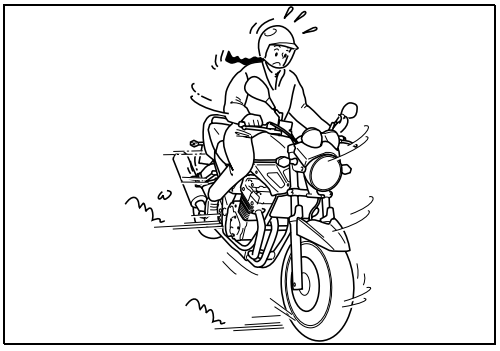
SAMPLE

ABS INFORMATION

⚠ WARNING

*** Be sure to bleed air from the brake fluid circuit when the brake feel is spongy or when a brake relating part is replaced.**
*** Never ride the motorcycle before bleeding the air.**

- Be sure to route the brake hoses correctly.

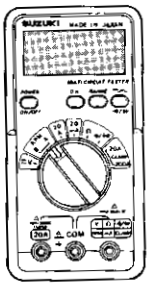


- The ABS does not shorten the motorcycle's braking distance. When riding down slopes or on wet or bumpy roads the braking distance is lengthened as compared to a motorcycle without ABS. In addition, braking distance increases the more slippery the road is.
- The ABS does not control slides which may occur when braking while turning. As with a motorcycle that does not have ABS, it is best not apply the brakes while turning.
- The brake levers may move by themselves when they are applied. This is not a malfunction.
- Only use the specified tires.

TESTER

- Use the Suzuki multi-circuit tester (09900-25008).
- Use well-charged batteries in the tester.
- Be sure to set the tester to the correct testing range.
- Since the resistance may differ depending on the tester used and the temperature, the resistance should be set to the specification.

MULTI-CIRCUIT TESTER



USING THE TESTER

- Incorrectly connecting the ⊕ and ⊖ probes may cause the inside of the tester to burnout.
- If the voltage and current are not known, make measurements using the highest range.
- When measuring the resistance with the multi-circuit tester, ∞ will be shown as 10.00 MΩ and "1" flashes in the display.
- Check that no voltage is applied before making the measurement. If voltage is applied the tester may be damaged.
- After using the tester, turn the power off.

TOOL 09900-25008: Multi-circuit tester set

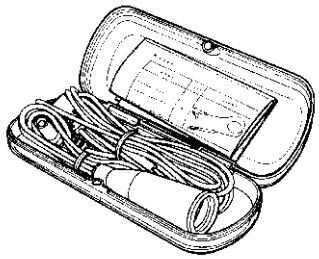
NOTE:

** When connecting the multi-circuit tester, use a needle pointed probe set to the back side of the lead wire coupler and connect the probes of tester to them.*

** Use a needle pointed probe set to prevent the rubber of the water proof coupler from damage.*

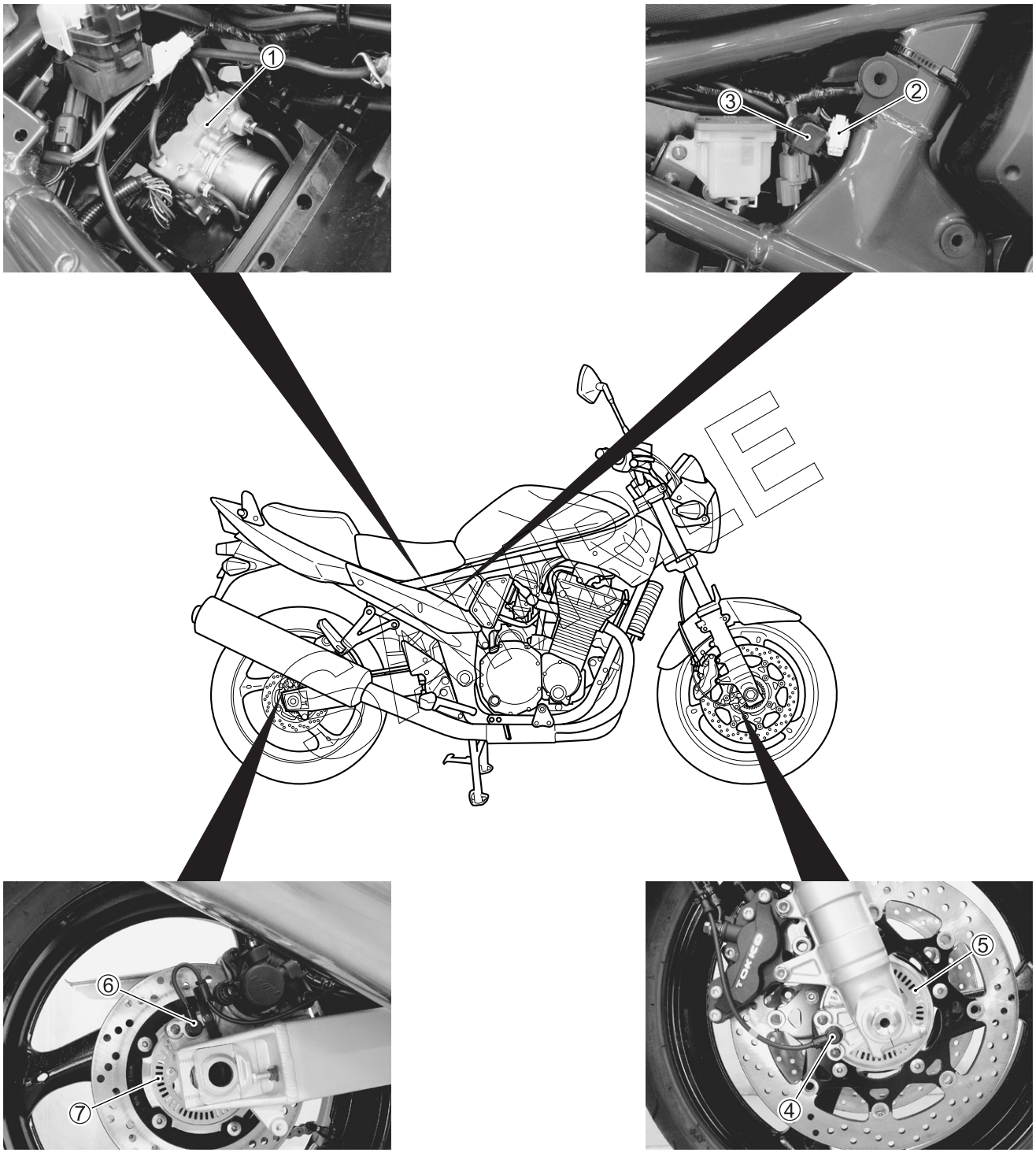
TOOL 09900-25009: Needle pointed probe set

NEEDLE POINTED PROBE SET



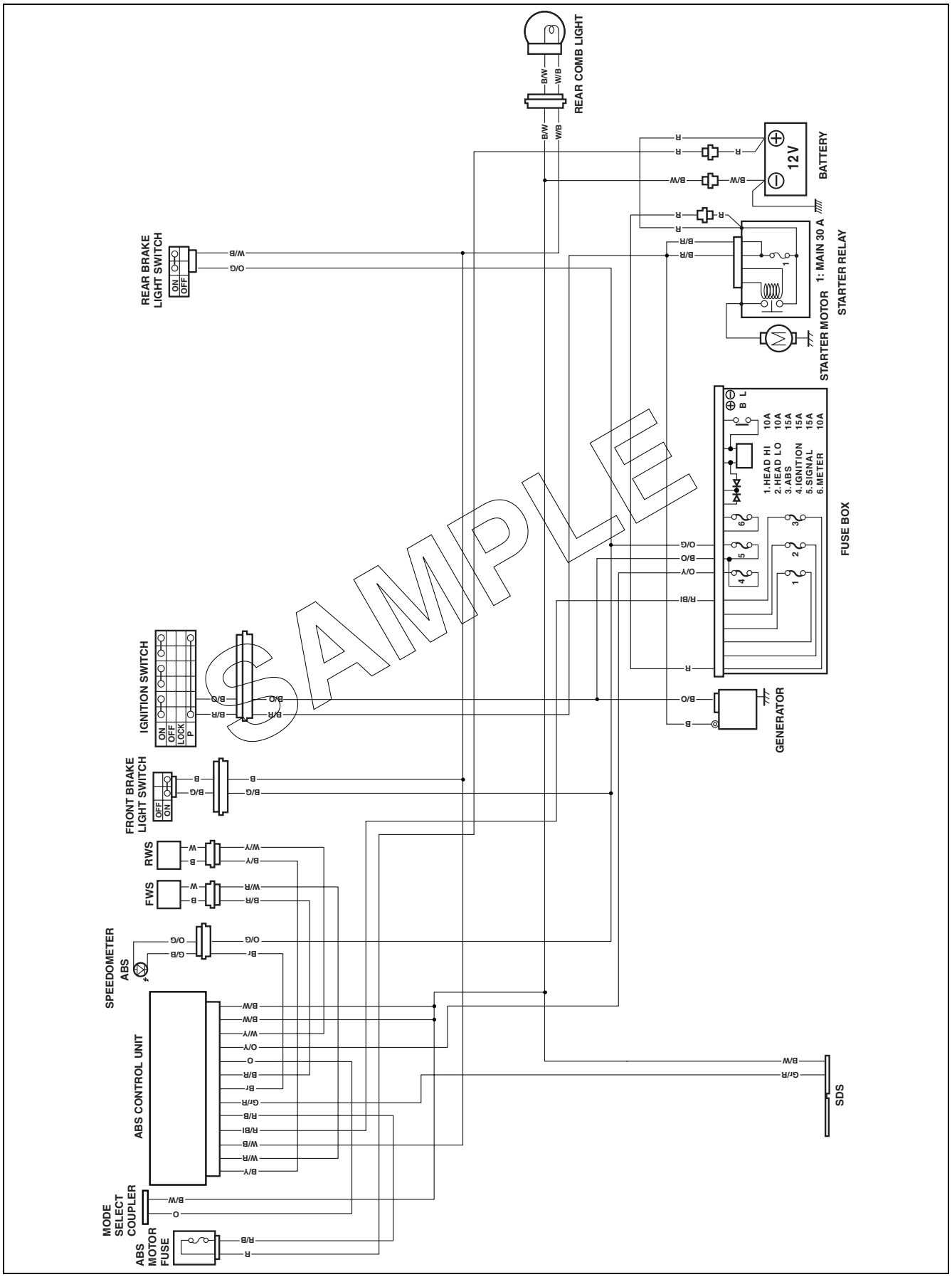
SAMPLE

ABS COMPONENTS
ABS COMPONENTS LOCATION

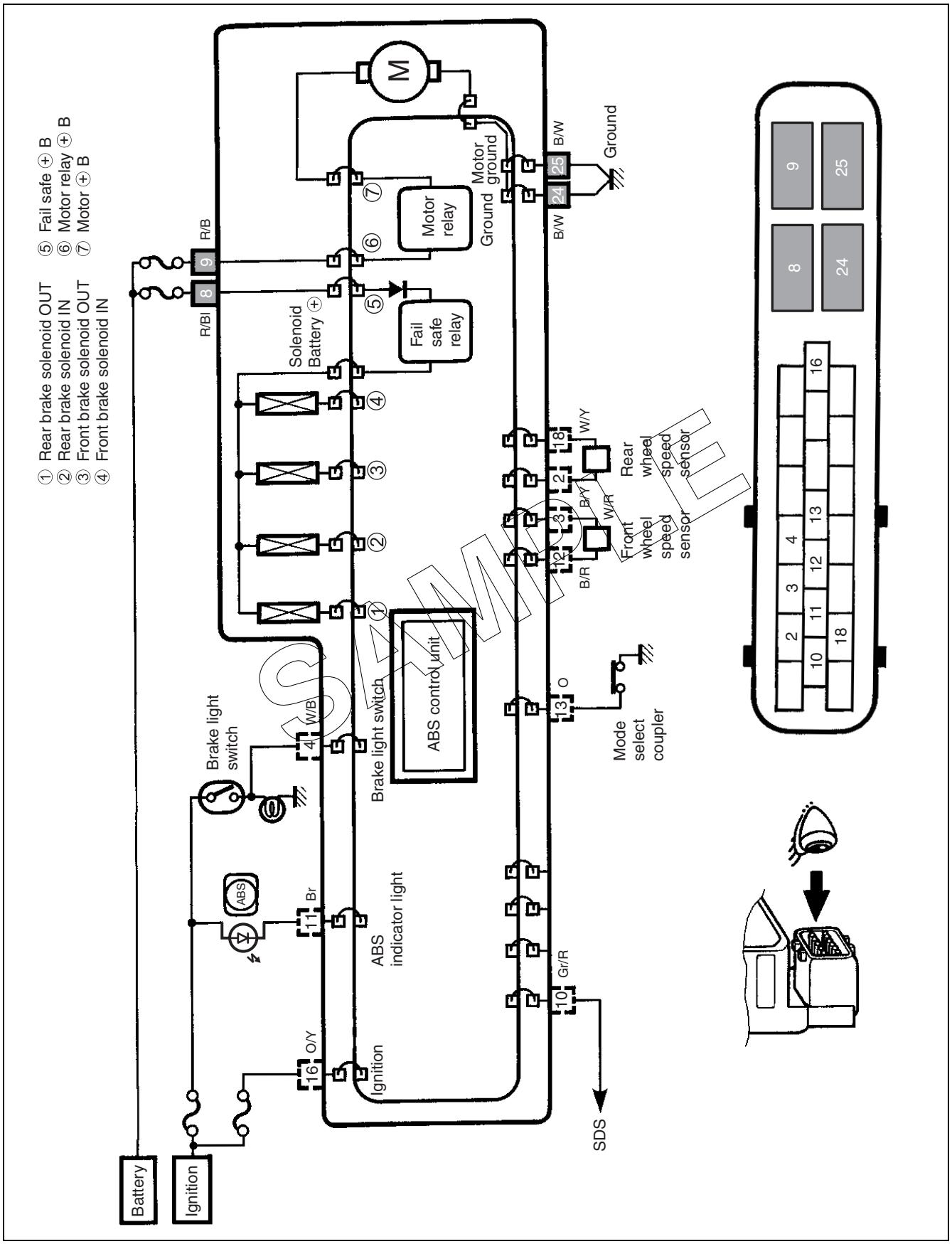


① ABS control unit/HU
② Mode selection coupler
③ SDS coupler
④ Front wheel speed sensor
⑤ Front wheel speed sensor rotor
⑥ Rear wheel speed sensor
⑦ Rear wheel speed sensor rotor

ABS WIRING DIAGRAM



ABS UNIT SYSTEM DIAGRAM



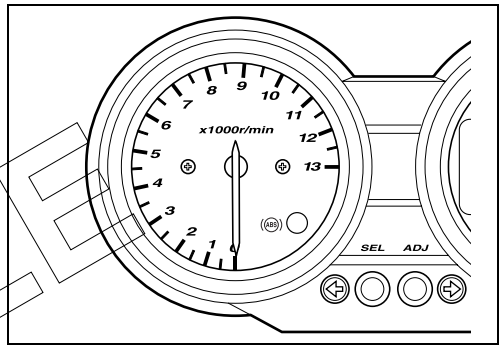
ABS TROUBLESHOOTING

ABS TROUBLESHOOTING DESCRIPTION

Many of the ABS malfunction diagnosing operations are performed by checking the wiring continuity. Quick and accurate detection of malfunctions within the complex circuitry assures the proper operation of the ABS. Before beginning any repairs, thoroughly read and understand this Supplementary Service Manual.
The ABS is equipped with a self-diagnosis function. The detected malfunction is stored as a diagnostic trouble code which causes the ABS indicator light to light up or flash in set patterns to indicate the malfunction. Diagnostic trouble codes are stored even when the ignition switch is turned to OFF and they can only be erased manually. In order to repair the ABS correctly, ask the customer for the exact circumstances under which the malfunction occurred, then check the ABS indicator light and the output diagnostic trouble codes. Explain to the customer that depending on how the motorcycle is operated (e.g., if the front wheel is off the ground), the ABS indicator light may light up even though the ABS is operating correctly.

ABS OPERATION AND ABS INDICATOR LIGHT

The ABS indicator light shows the ABS operating condition. During normal operation, the ABS indicator light lights up when the ignition switch is turned to ON and goes off after the motorcycle is ridden at more than 10 km/h (6.2 mile/h). If a malfunction has occurred, the ABS indicator light keeps lighting up.



The ABS indicator light goes off when the motorcycle is ridden at more than 10 km/h.	The ABS is normally activated.
The ABS indicator light keeps lighting up even though the motorcycle is ridden at more than 10 km/h (6.2 mile/h).	One or more malfunction has been found and ABS activation been hanged up.
The ABS indicator light does not light up when turning the ignition switch to ON.	Check the wire harness and combination meter. (☞Page 28)

STORED DTCs (Diagnostic Trouble Codes)

As for the diagnostic trouble code, the code of the first malfunction occurred during one ignition ON period will be stored. Pay attention to the fact that even though there may occur several malfunctions in one ON-period, only one code will be stored. Codes of malfunction that occurred in the past are all stored, but the same diagnostic trouble code will not be redundant.
Check and see if any diagnostic trouble code remains, by actually running the machine to activate ABS and by carrying out the self-diagnosis after deleting the diagnostic trouble code once the malfunctioned part is repaired.

SAMPLE

TROUBLESHOOTING PROCEDURE

Troubleshooting should be proceed as follows. If the order is performed incorrectly or any part is omitted, a misdiagnosis may result.

1. Gather information from the customer. (☞Page 24)
2. Perform the pre-diagnosis inspection. (☞Page 25)
3. Inspect the ABS indicator light. (☞Page 28)
4. Output the DTCs stored in the ABS control unit. (☞Page 32)
5. Perform appropriate troubleshooting procedures according to the DTCs output. (☞Page 33)
   If troubleshooting procedures cannot be performed, try to determine the cause of the malfunction according to the information gathered in 1 through 4 and inspect the wiring. (☞Page 19 and 20)

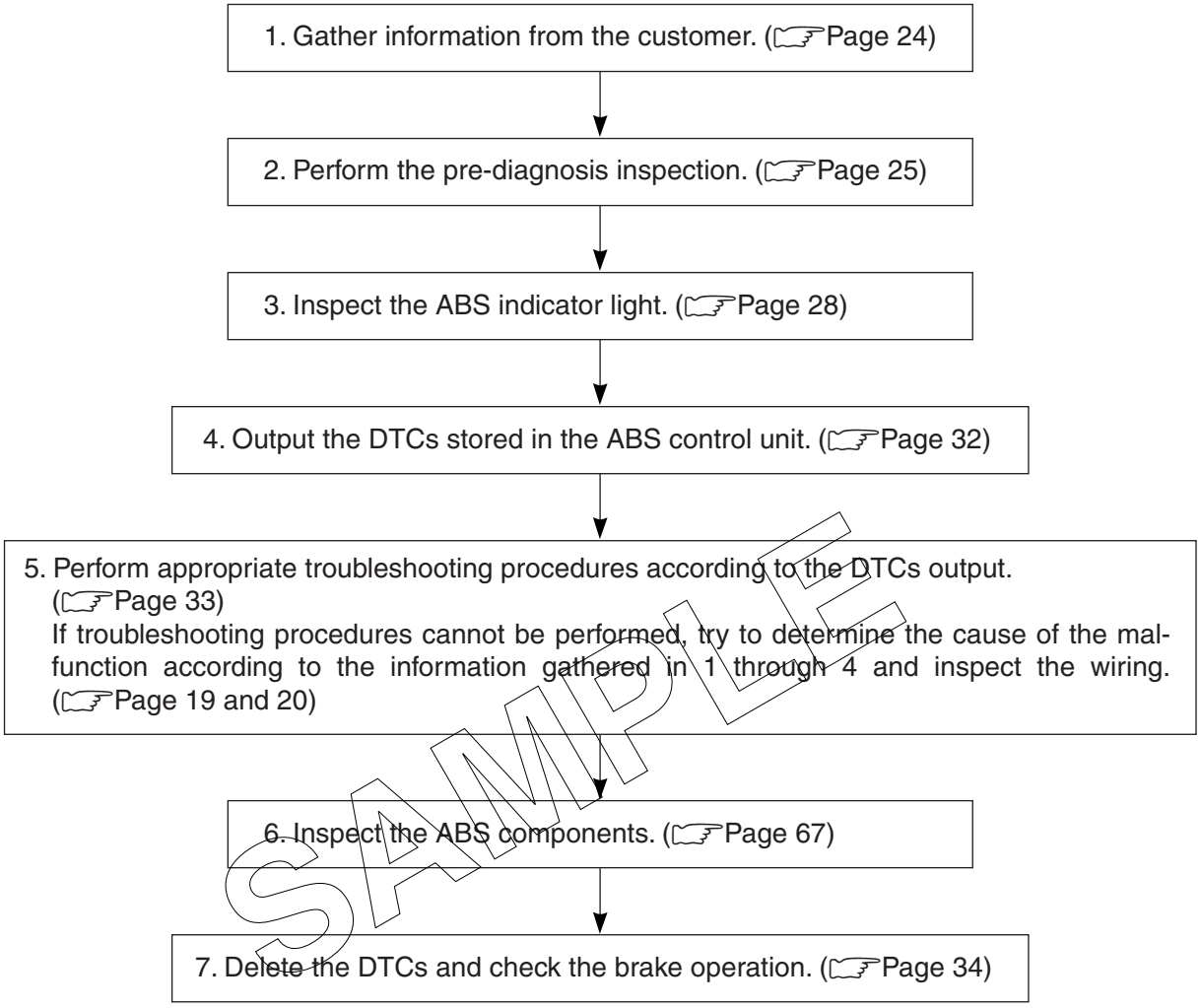
CAUTION

*** When disconnecting couplers and turning the ignition switch to ON, disconnect the ABS control unit coupler in order to prevent a DTC from being stored.**
*** Each time a resistance is measured, the ignition switch should be set to OFF.**

6. Inspect the ABS components. (☞Page 67)
7. Delete the DTCs and check the brake operation. (☞Page 34)

SAMPLE

BASIC TROUBLESHOOTING DIAGRAM


1. Gather information from the customer. (☞Page 24)
2. Perform the pre-diagnosis inspection. (☞Page 25)
3. Inspect the ABS indicator light. (☞Page 28)
4. Output the DTCs stored in the ABS control unit. (☞Page 32)
5. Perform appropriate troubleshooting procedures according to the DTCs output. (☞Page 33)
If troubleshooting procedures cannot be performed, try to determine the cause of the malfunction according to the information gathered in 1 through 4 and inspect the wiring. (☞Page 19 and 20)
6. Inspect the ABS components. (☞Page 67)
7. Delete the DTCs and check the brake operation. (☞Page 34)

SAMPLE

INFORMATION GATHERING

To properly diagnose a malfunction, one must not make guesses or assumptions about the circumstances that caused it. Proper diagnosis and repair require duplicating the situation in which the malfunction occurred. If a diagnosis is made without duplicating the malfunction, even an experienced service technician may make a misdiagnosis and not perform the servicing procedure correctly, resulting in the malfunction not being repaired. For example, a malfunction that occurs only while braking on slippery surfaces will not occur if the motorcycle is ridden on a non-slippery surface. Therefore, in order to properly diagnose and repair the motorcycle, the customer must be questioned about the conditions at the time that the malfunction occurred making "Information gathering" very important. In order for the information obtained from the customer to be used as a reference during troubleshooting, it is necessary to ask certain important questions concerning the malfunction. Therefore, a questionnaire has been created to improve the information-gathering procedure.

Questionnaire Example

Customer's name	License plate No.	Frame serial No.	Mileage
First registered year	Date malfunction occurred	Frequency of occurrence	Weather of date of occurrence

PROBLEM SYMPTOMS	
ABS operation ☐ ABS does not work ☐ ABS works so often ☐ Too long stopping distance ☐ Others	**Past malfunctions and repairs**

CONDITIONS WHEN MALFUNCTION OCCURED	
ABS indicator light ☐ Does not light up ☐ Lights up Goes off after running over 10 km/h ☐ Yes ☐ No ☐ Flashes	**Riding conditions** ☐ While stopping ☐ Over 10 km/h ☐ When turning ☐ Others
Tires ☐ Abnormal air pressure ☐ Less thread depth ☐ No specified tires installed	**Brake operating conditions** ☐ Usual braking ☐ Quick/hard braking
Road surface Paved road ☐ Dry ☐ Wet ☐ Others Unpaved road ☐ Gravel ☐ Muddy ☐ Uneven ☐ Others	**Interface** ☐ Too big pulsations at brake levers ☐ Too large brake lever strokes ☐ Others
	Others ☐ Abnormal noise from the ABS control unit/HU ☐ Skid noise from the calipers ☐ Vibration at the brake levers
Note:	

SAMPLE

NOTE:

The above form is a standard sample. It should be modified according to characteristic of each market.

PRE-DIAGNOSIS INSPECTION

The mechanical and hydraulic components of the brake system should be inspected prior to performing any electrical checks. These inspections may find problems that the ABS could not detect; thus, shortening repair time.

BRAKE

Brake fluid level check (☞GSF1200K6/SK6 0B-14)
Brake pad inspection (☞GSF1200K6/SK6 0B-14)
Brake fluid circuit air bleeding (☞GSF1200K6/SK6 4A-5)

Tire type
DUNLOP (Front: D218F N Rear: D218N)

CAUTION

*** The standard tire fitted on this motorcycle is 120/70ZR17M/C (58W) for front and 180/55ZR17M/C (73W) for rear. The use of tires other than those specified may cause instability. It is highly recommended to use a SUZUKI Genuine Tire.**
*** Replace the tire as a set, otherwise the DTC "25" may be stored.**

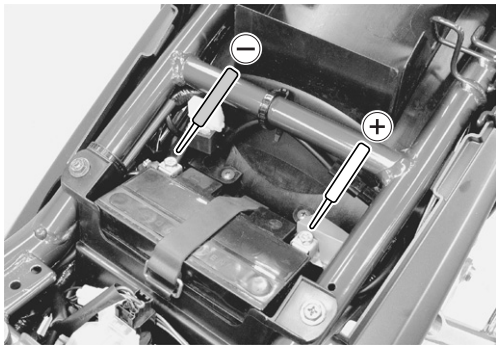
Tire pressure (☞GSF1200K6/SK6 0B-15)
Wheel (☞GSF1200K6/SK6 2D-6 and 2D-12)

SAMPLE

BATTERY

Battery voltage

- Turn the ignition switch to OFF.
- Remove the seat. (☞GSF1200K6/SK6 9D-5)
- Measure the voltage between the ⊕ and ⊖ battery terminals using the multi-circuit tester.



DATA Battery voltage: 12.0 V and more

TOOL 09900-25008: Multi-circuit tester set

Tester knob indication: Voltage (⎓)

If the voltage is less than 12.0 V, charge or replace the battery and inspect the charging system. (☞GSF1200K6/SK6 1J-4)

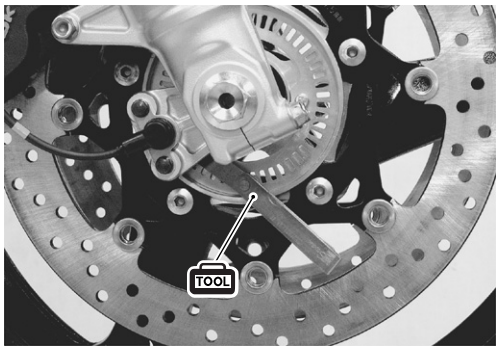
ABS COMPONENT

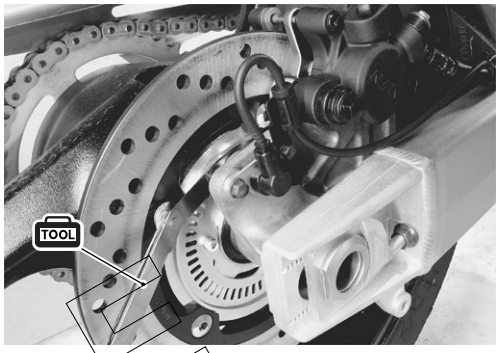
Wheel speed sensor – sensor rotor clearance

- Inspect the clearance between the wheel speed sensor and sensor rotor for each wheel using the thickness gauge.

DATA Wheel speed sensor – sensor rotor clearance:
0.3 – 1.5 mm (0.012 – 0.059 in)

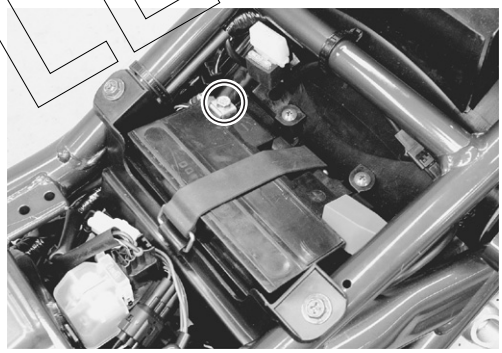
TOOL 09900-20803: Thickness gauge
09900-20806: Thickness gauge





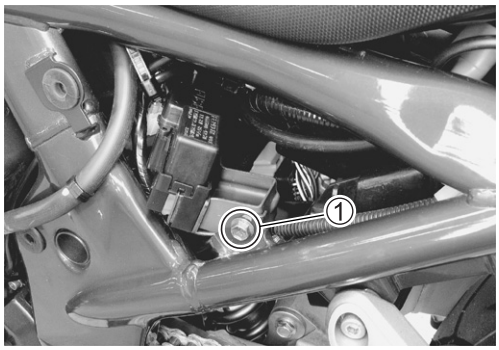
ABS control unit/HU ground wire inspection

- Turn the ignition switch to OFF.
- Remove the seat. (☞GSF1200K6/SK6 9D-5)
- Disconnect the battery ⊖ lead wire.
- Remove the left frame cover. (☞GSF1200K6/SK6 9D-5)

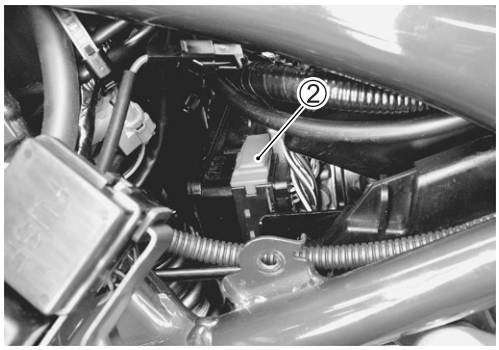


SAMPLE

- Remove the fuse box mounting bolt ①.



- Disconnect the ABS control unit coupler ②.

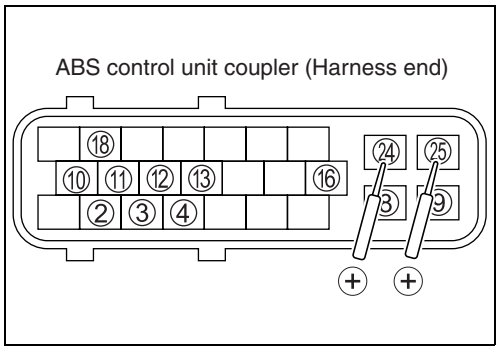


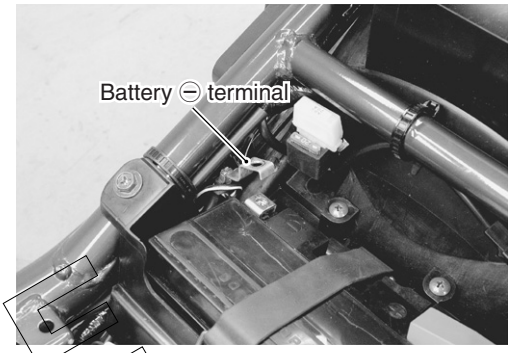
- Check for continuity between ㉔ (B/W) at the coupler and the battery ⊖ terminal, also ㉕ (B/W) at the coupler and the battery ⊖ terminal.

09900-25008: Multi-circuit tester set

Tester knob indication: Continuity (•))))

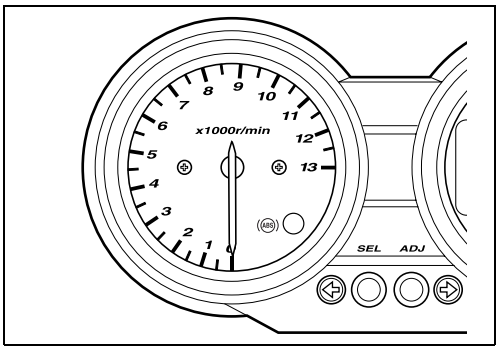
If there are no continuity, repair the coupler or wire harness.





SAMPLE

ABS INDICATOR LIGHT INSPECTION

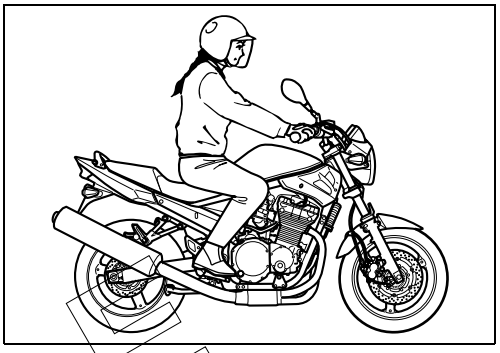


Step 1

1) Check if the ABS indicator light lights up when turning the ignition switch to ON.

   Does the ABS indicator light up?

YES	Go to step 2.
NO	Go to step 3.



The ABS indicator light lights up

Step 2

1) Ride the motorcycle at more than 10 km/h (6.2 mile/h).

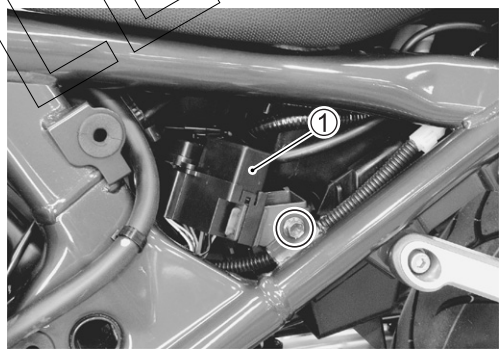
   Does the ABS indicator light go off?

YES	Normal (No DTC exists)
NO	DTC OUTPUT (☞Page 32) If DTC can not be output (the ABS indicator light does not flash), go to step 7.

The ABS indicator light does not light up

Step 3

1) Remove the left frame cover. (☞GSF1200K6/SK6 9D-5)
2) Remove the fuse box ① by removing the mounting bolt.



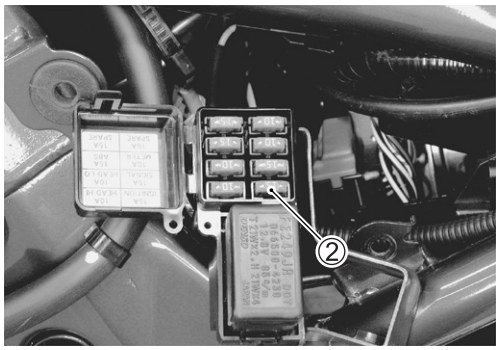
SAMPLE

3) Open the fuse box and inspect the ignition fuse ②.

   Ignition fuse: 15 A

   Is the ignition fuse OK?

YES	Go to step 4.
NO	Replace the ignition fuse.



CAUTION

If a fuse is blown, find the cause of the problem and correct it before replacing the fuse.

Step 4

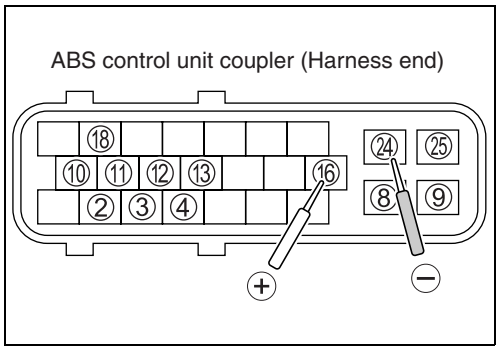
1) Turn the ignition switch to OFF.
2) Disconnect the ABS control unit coupler. (☞Page 26)
3) Turn the ignition switch to ON with the ABS control unit coupler disconnected, measure the voltage between ⑯ (O/Y) and ㉔ (B/W) at the coupler.

DATA Normal value: Battery voltage (12.0 V and more)

TOOL 09900-25008: Multi-circuit tester set

Tester knob indication: Voltage (⎓)

Is the voltage between ⑯ and ㉔ normal?



YES	Go to step 5.
NO	Inspect the wire harness. (Faulty ignition or ground wire)

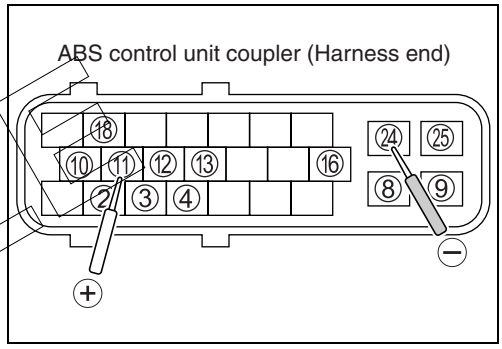
Step 5

1) Turn the ignition switch to ON with the ABS control unit coupler disconnected, measure the voltage between ⑪ (Brown) and ㉔ (B/W) at the coupler.

DATA Normal value: Battery voltage (12.0 V and more)

Tester knob indication: Voltage (⎓)

Is the voltage between ⑪ and ㉔ normal?



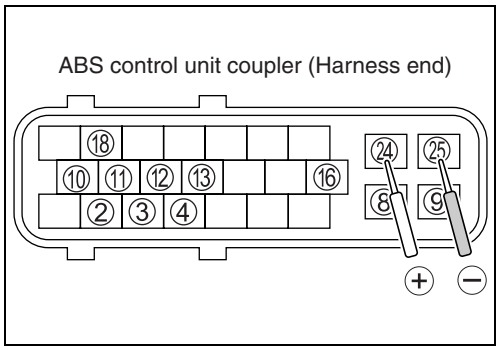
YES	Go to step 6.
NO	Inspect the wire harness. (Faulty indicator light wire) Signal fuse or indicator light is blown. (☞Page 75)

Step 6

1) Turn the ignition switch to OFF.
2) Check for continuity between ㉔ (B/W) at the coupler and body ground, also ㉕ (B/W) at the coupler and body ground.

Tester knob indication: Continuity (•))))

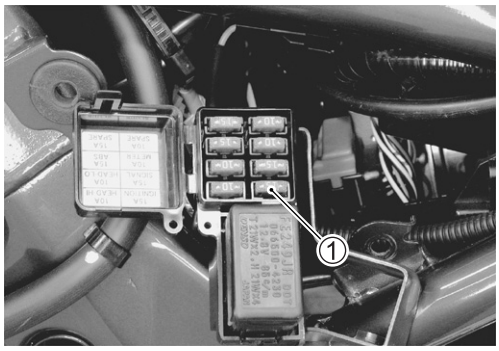
Are there continuity between ㉔ (㉕) and body ground?



YES	Replace the ABS control unit/HU.
NO	Inspect the wire harness. (Faulty ground wire)

SAMPLE

Step 7
The ABS indicator light does not go off
1) Turn the ignition switch to OFF.
2) Remove the left frame cover. (☞GSF1200K6/SK6 9D-5)
3) Remove the fuse box mounting bolt. (☞Page 28)
4) Open the fuse box and inspect the ignition fuse ①.



Ignition fuse: 15 A

Is the ignition fuse OK?

YES	Go to step 8.
NO	Replace the ignition fuse.

CAUTION

If a fuse is blown, find the cause of the problem and correct it before replacing the fuse.

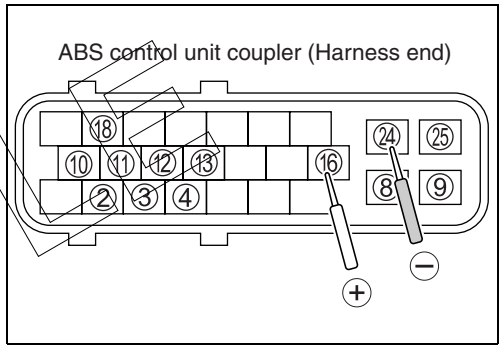
Step 8
1) Turn the ignition switch to OFF and disconnect the ABS control unit coupler. (☞Page 26)
2) Turn the ignition switch to ON with the ABS control unit coupler disconnected, measure the voltage between ⑯ (O/Y) and ㉔ (B/W) at the coupler.

DATA Normal value: Battery voltage (12.0 V and more)

TOOL 09900-25008: Multi-circuit tester set

Tester knob indication: Voltage (⎓)

Is the voltage between ⑯ and ㉔ normal?



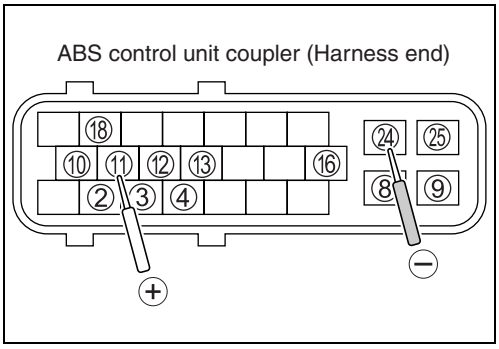
YES	Go to step 9.
NO	Inspect the wire harness. (Faulty ignition or ground wire)

Step 9
1) Turn the ignition switch to ON with the ABS control unit coupler disconnected, measure the voltage between ⑪ (Brown) and ㉔ (B/W) at the coupler.

DATA Normal value: Battery voltage (12.0 V and more)

Tester knob indication: Voltage (⎓)

Is the voltage between ⑪ and ㉔ normal?



YES	Go to step 10.
NO	Inspect the wire harness. (Faulty indicator light wire)

SAMPLE

Step 10

1) Turn the ignition switch to OFF.
2) Remove the right frame cover. (☞GSF1200K6/SK6 9D-5)
3) Short the mode select coupler terminals (Orange – B/W) using the special tool.

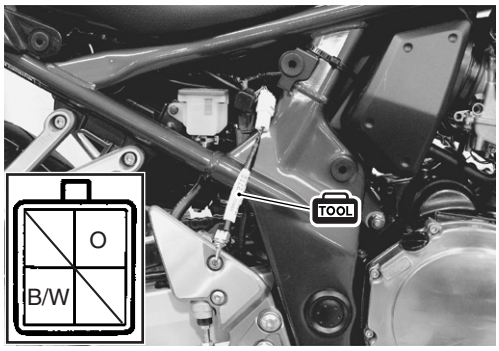
09930-82710: Mode select switch

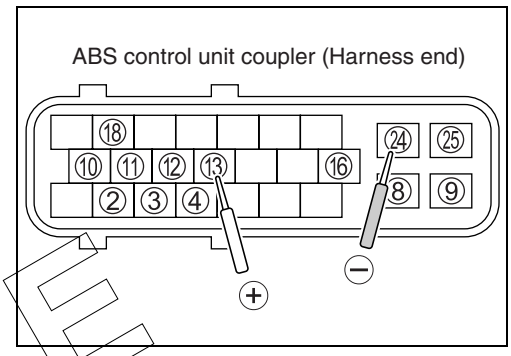
4) Check for continuity between ⑬ (Orange) and ㉔ (B/W) at the coupler.

Tester knob indication: Continuity (•))))

Is there continuity between ⑬ and ㉔?

YES	Replace the ABS control unit/HU.
NO	Inspect the wire harness. (Faulty mode select switch wire)





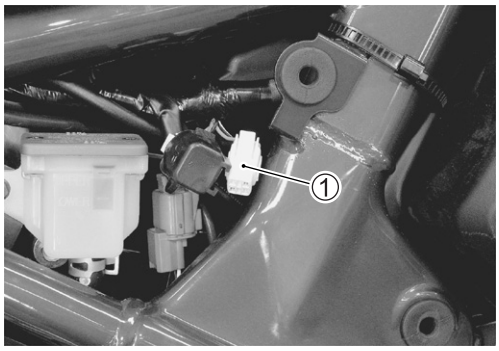
SAMPLE

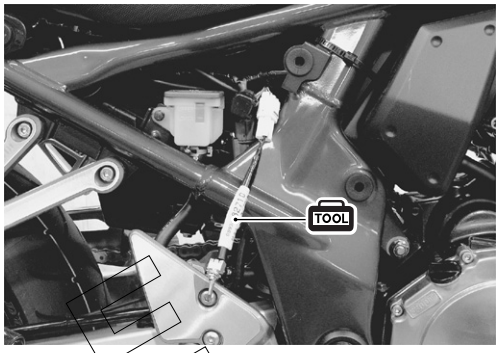
DTC (Diagnostic Trouble Code) OUTPUT

Connect the special tool to the mode select coupler to output the memorized DTCs on the ABS indicator light.

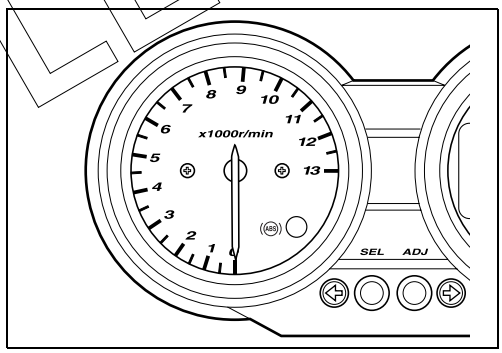
- Turn the ignition switch to OFF.
- Remove the right frame cover. (☞GSF1200K6/SK6 9D-5)
- Connect the special tool to the mode select coupler ① (Orange – B/W).

09930-82710: Mode select switch





- Switch the special tool to ON.
- Turn the ignition switch to ON.
  The ABS indicator light starts flashing to indicate the DTC.



NOTE:

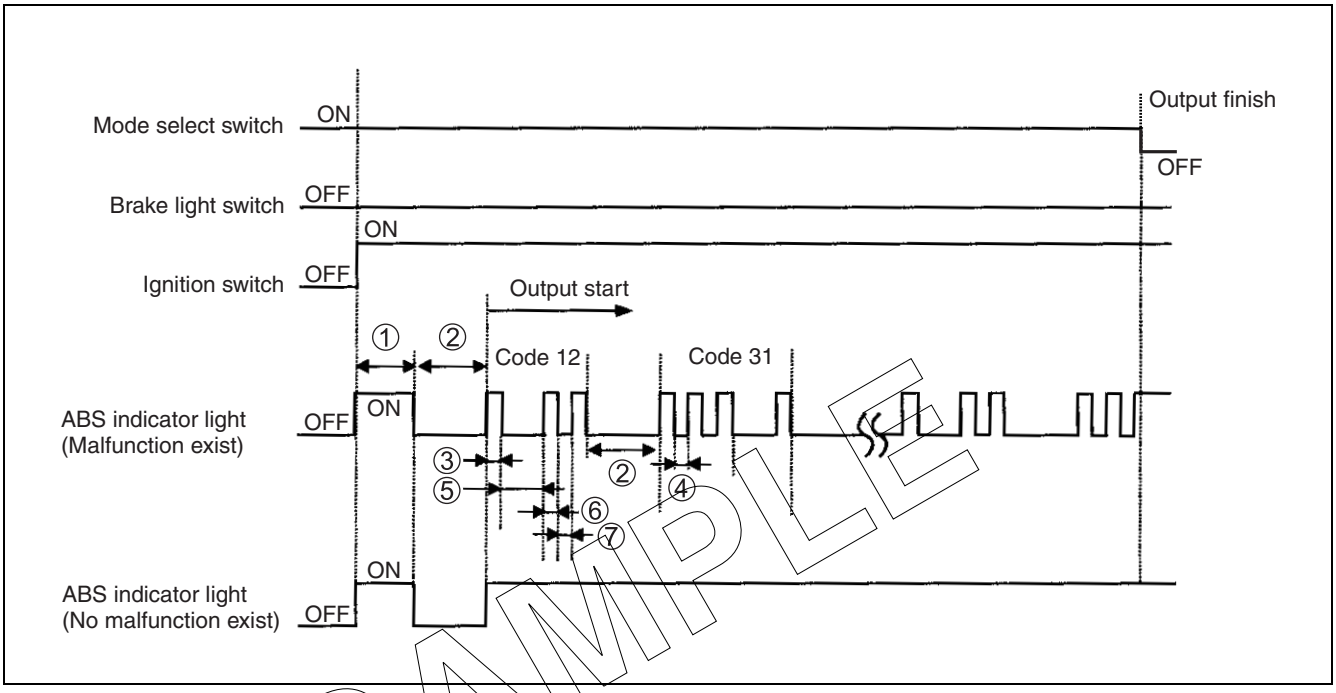
* *If there is a DTC, the ABS indicator light keeps flashing cyclic and repeatedly.*
* *If there is no DTC, the ABS indicator light keeps lighting on.*
* *If the DTCs are to be output for a long time, remove the HEAD-LO fuse in order to prevent the battery from discharging.*

SAMPLE

UNDERSTANDING THE DTC (Diagnostic Trouble Code)

A two-digit DTC is shown through the flashing pattern of the ABS indicator light. A number between 1 and 9 is represented by the number of times that the ABS indicator light lights up in interval of 0.4 seconds and the separation between the tens and ones are indicated by the light staying off for 1.6 seconds. In addition, the separation between the start code and the DTC is indicated by the light being off for 3.6 seconds. After the start code is displayed, DTCs appear from the smallest number code.

If no DTCs are memorized, the ABS indicator light keeps lighting up.



SAMPLE

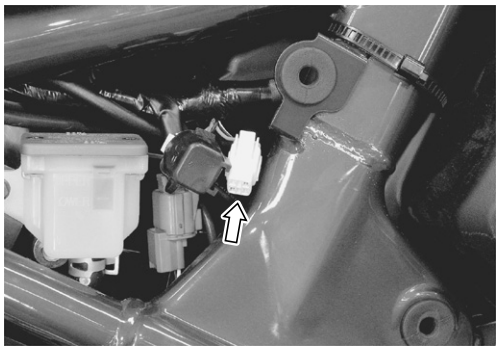
① Initial minimum light ON time (About 2 seconds)
② Error code interval (About 3.6 seconds)
③ Main code light ON time (0.4 seconds)
④ Main code light OFF time (0.4 seconds)
⑤ Main-sub code interval (1.6 seconds)
⑥ Sub code light ON time (0.4 seconds)
⑦ Sub code light OFF time (0.4 seconds)

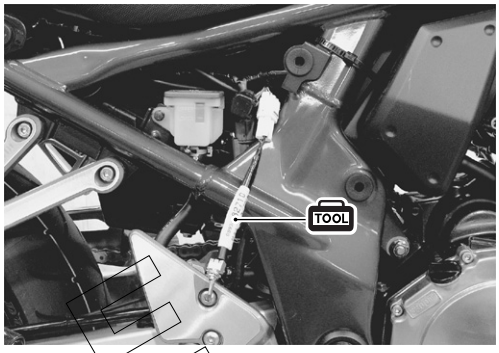
DTC DELETING AND ABS OPERATION CHECK

DTC DELETING

- Connect the special tool to the mode select coupler (O – B/W) and output the DTCs.

09930-82710: Mode select switch

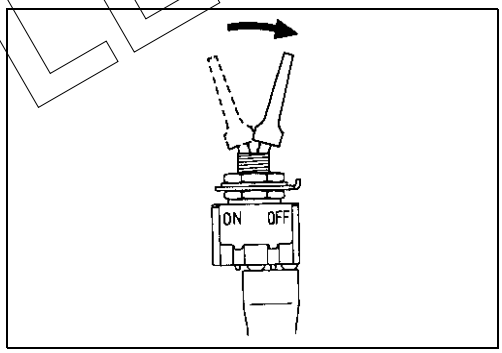




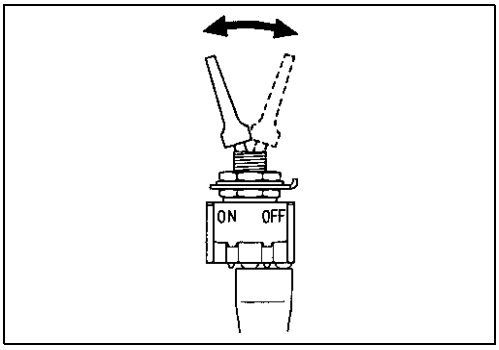
- While the DTCs are being output, set the special tool to OFF.

CAUTION

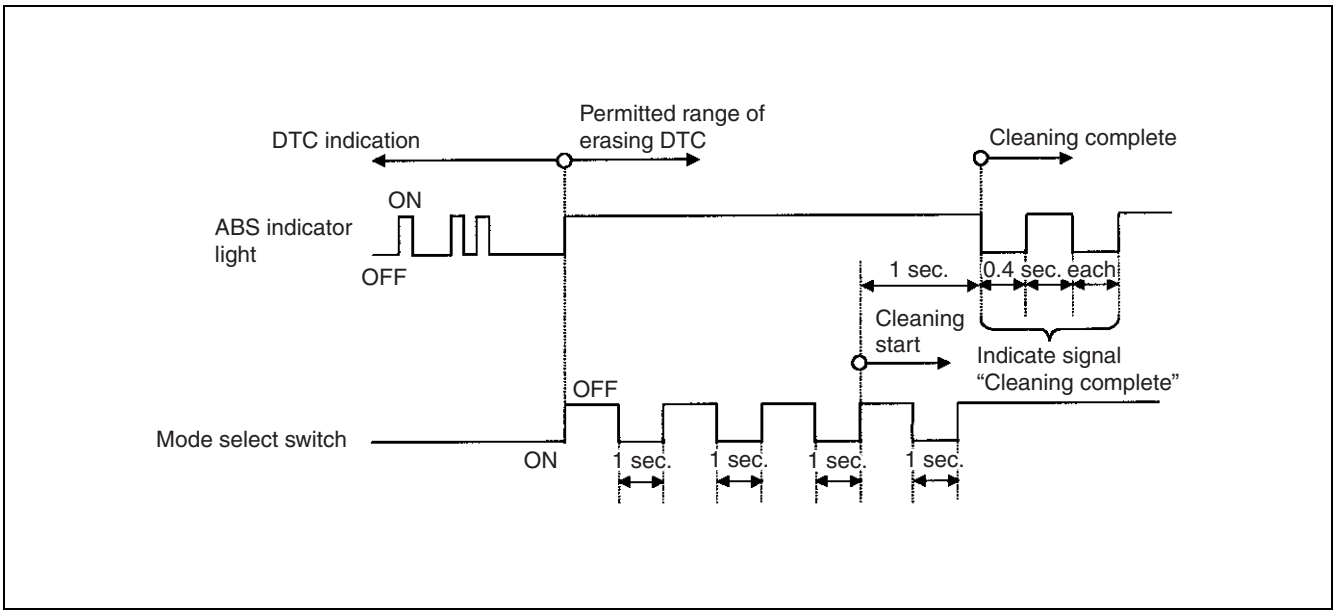
The DTC deletion mode starts 12.5 seconds after the switch is set to OFF.



- In the DTC deletion mode, switch the ABS test switch from OFF to ON three times, each time leaving it at ON for more than 1 second.



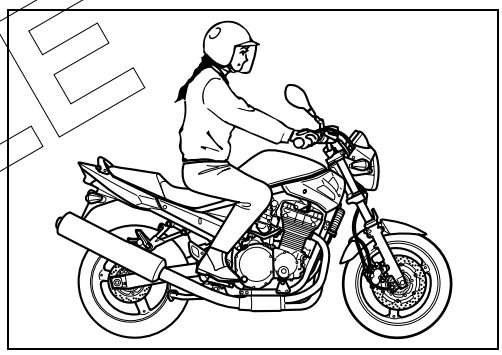
SAMPLE



ABS OPERATION CHECK

After deleting the DTCs, repeat the code output procedure and make sure that no DTCs remain (the ABS indicator light no longer flashes). If any DTCs remain, perform the appropriate procedures, then delete the codes. If DTCs are left stored, confusion may occur and unnecessary repairs may be made.

Afterwards, ride the motorcycle at more than 30 km/h (18.6 mile/h) and quickly apply the brakes to check that the ABS activates correctly.



SAMPLE

SDS CHECK

Using SDS, take the sample of data from the new motorcycle and at the time of periodic maintenance at your dealership.

Save the data in the computer or by printing and filing the hard copies. The saved or filed data are useful for troubleshooting as they can be compared periodically with changes over time or failure conditions of the motorcycle.

For example, when a motorcycle is brought in for service but the troubleshooting is difficult, comparison with the normal data that have been saved or filed can allow the specific ABS failure to be determined.

- Remove the right frame cover. (☞GSF1200K6/SK6 9D-5)
- Set up the SDS tool. (☞Page 37)

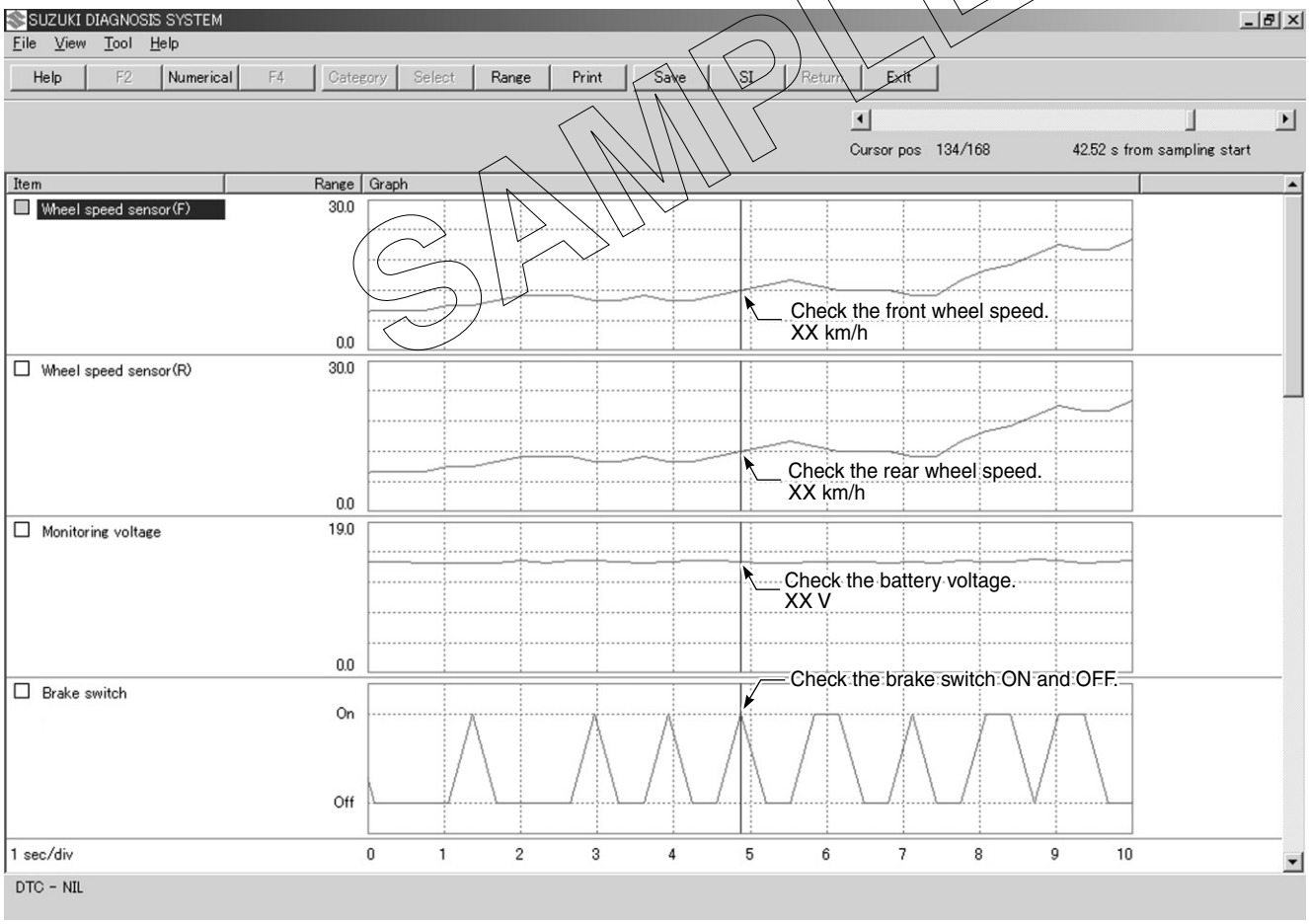
TOOL **09904-41010: SDS set tool**
99565-01010-008: CD-ROM Ver. 8

NOTE:

** Before taking the sample of data, check and clear the Past DTC. (☞Page 38)*

** A number of different data under a fixed condition as shown below should be saved or filed as sample.*

DATA SAMPLED FROM ABS HU SYSTEM

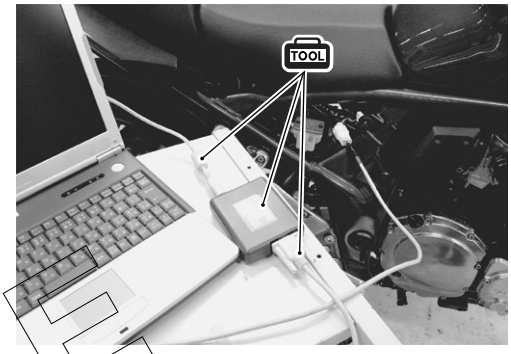


USE OF SDS DIAGNOSTIC PROCEDURES

** Don't disconnect couplers from ABS HU, the battery cable from the battery, ABS HU ground wire harness from the engine or main fuse before confirming the malfunction code (self-diagnostic trouble code) stored in memory. Such disconnection will erase the memorized information in ABS HU memory.*

** DTC stored in ABS HU memory can be checked by the SDS.*

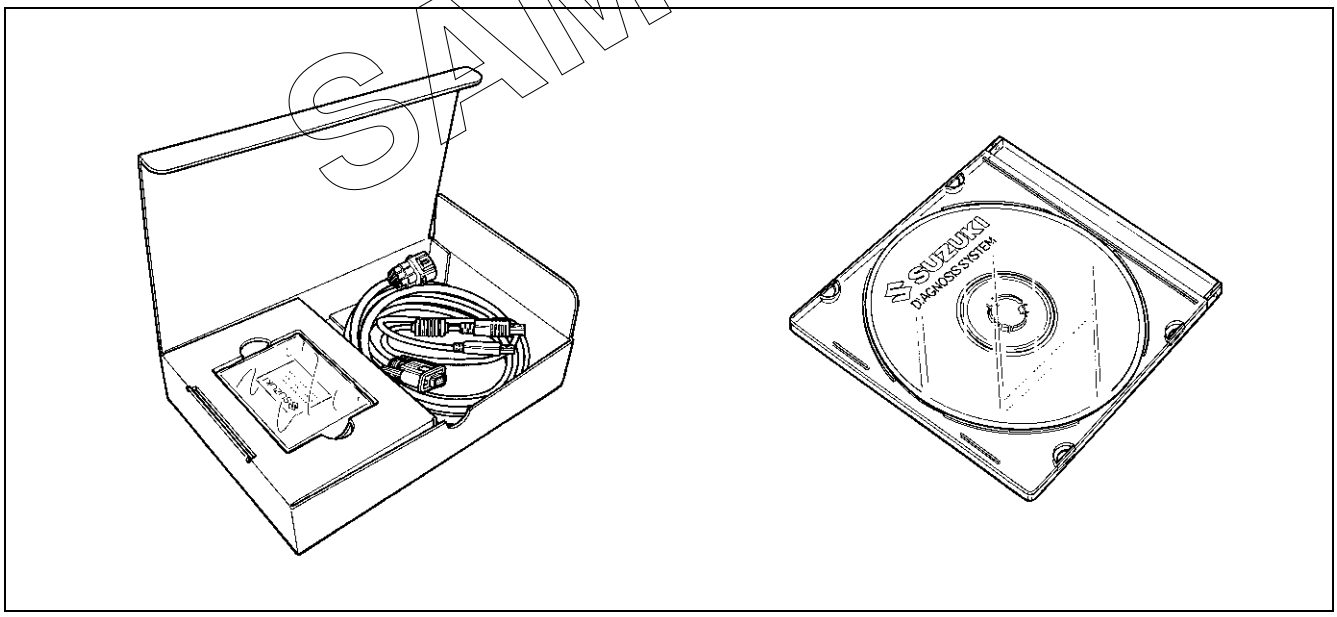
** Be sure to read "CAUTIONS IN SERVICING" (☞Page 15) before inspection and observe what is written there.*



- Remove the right frame cover. (☞GSF1200K6/SK6 9D-5)
- Set up the SDS tool. (Refer to the SDS operation manual for further details)
- Read the DTC (Diagnostic Trouble Code) and show data when trouble (displaying data at the time of DTC) according to instructions displayed on SDS.
- Not only is SDS used for detecting Diagnostic Trouble Codes but also for reproducing and checking on screen the failure condition as described by customers using the trigger.
- How to use trigger. (Refer to the SDS operation manual for further details.)

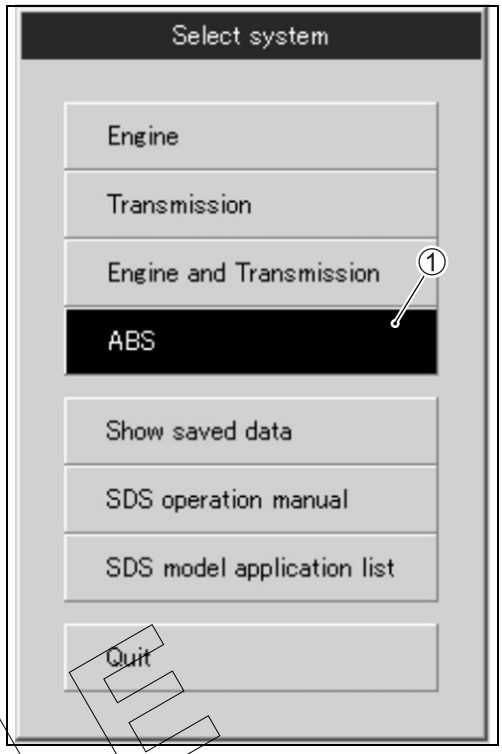
TOOL 09904-41010: SDS set tool
99565-01010-008: CD-ROM Ver. 8

SAMPLE



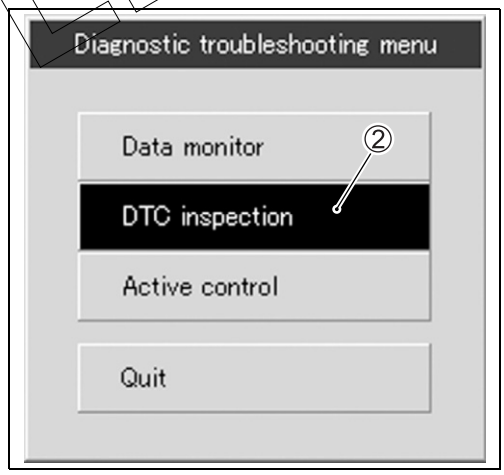
USE OF SDS DIAGNOSIS RESET PROCEDURE

- After repairing the trouble, turn OFF the ignition switch and turn ON again.
- Click the ABS button ①.

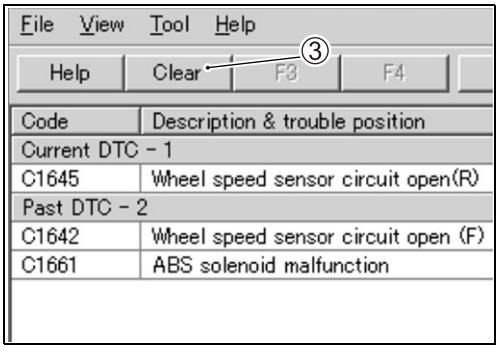


- Click the "DTC inspection" button ②.
- Check the DTC.
- The previous malfunction history code (Past DTC) still remains stored in the ABS HU. Therefore, erase the history code memorized in the ABS HU using SDS tool.

NOTE:
The DTC is memorized in the ABS HU also when the wire coupler of any sensor is disconnected. Therefore, when a wire coupler has been disconnected at the time of diagnosis, erase the stored malfunction history code using SDS.

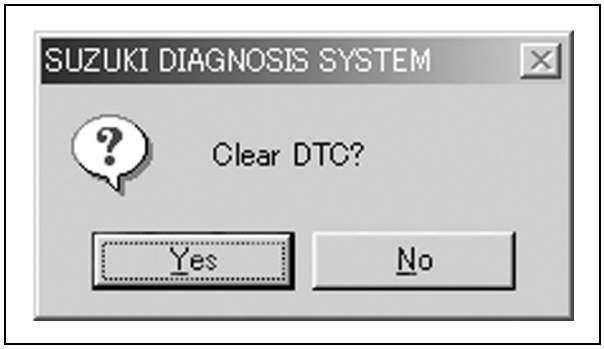


- Click "Clear" ③ to delete history code (Past DTC).

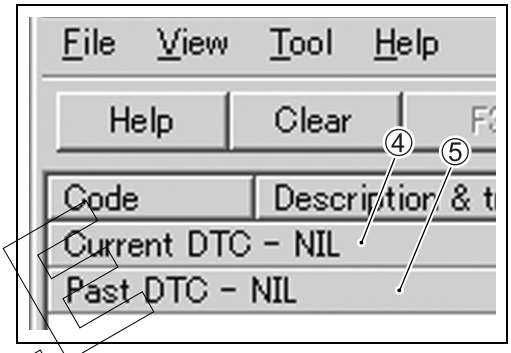


SAMPLE

- Follow the displayed instructions.



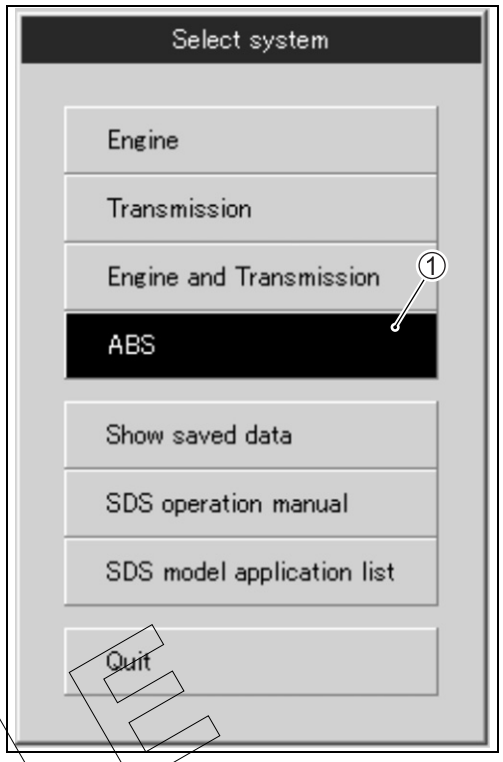
- Check that both "Current DTC" ④ and "Past DTC" ⑤ are deleted (NIL).



SAMPLE

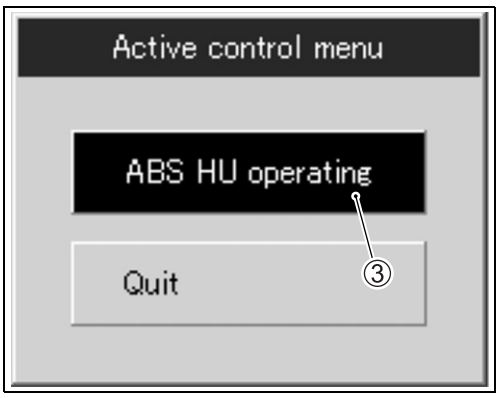
ACTIVE CONTROL INSPECTION

1) Set up the SDS tool. (Refer to the SDS operation manual for further details.)
2) Turn the ignition switch ON.
3) Click "ABS" ①.



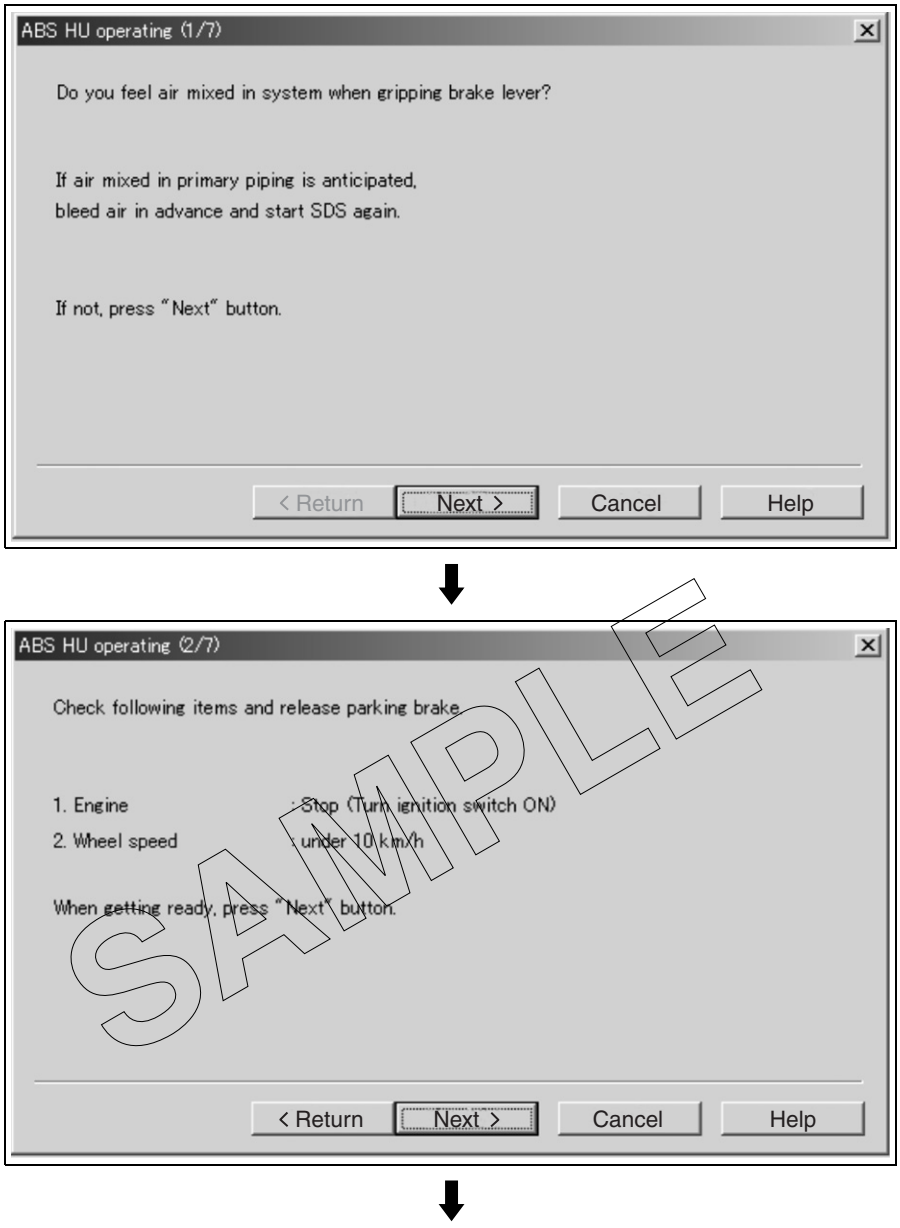
4) Click "Active control" ②.

5) Click "ABS HU operating" ③.

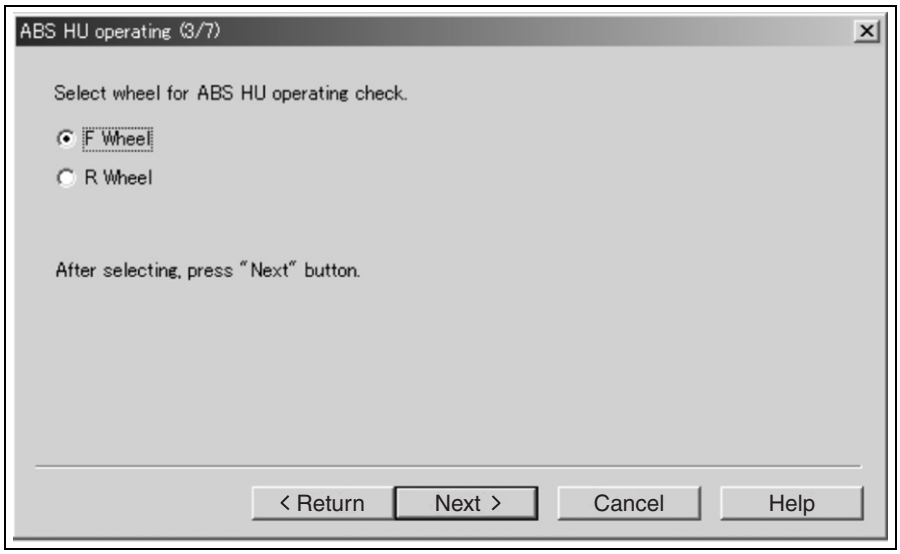


SAMPLE

6) It progresses to the next according to the following indication of screens.


ABS HU operating (1/7)
Do you feel air mixed in system when gripping brake lever?
If air mixed in primary piping is anticipated,
bleed air in advance and start SDS again.
If not, press "Next" button.
< Return
Next >
Cancel
Help
ABS HU operating (2/7)
Check following items and release parking brake.
1. Engine : Stop (Turn ignition switch ON)
2. Wheel speed : under 10 km/h
When getting ready, press "Next" button.
< Return
Next >
Cancel
Help

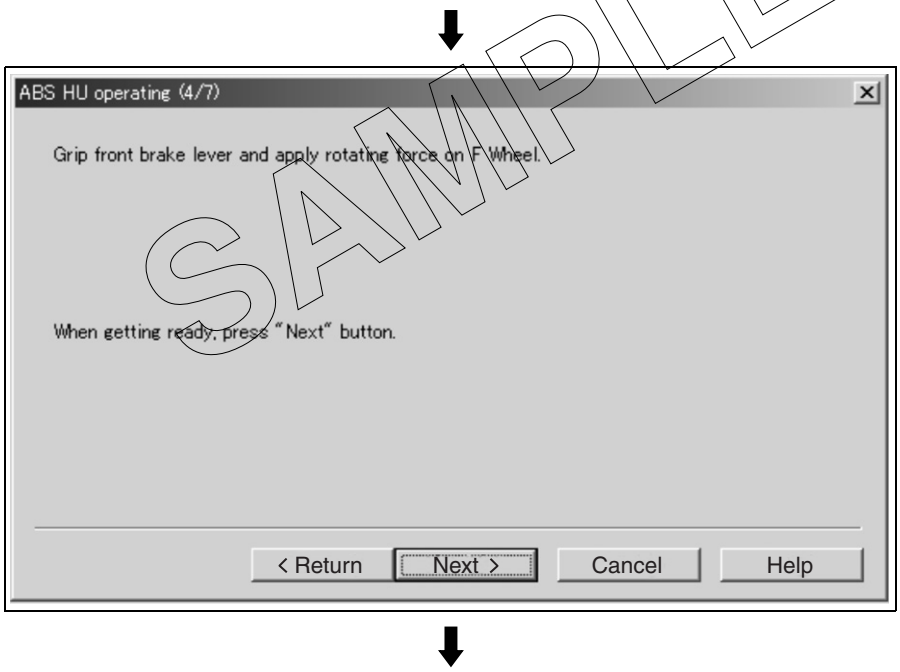
SAMPLE



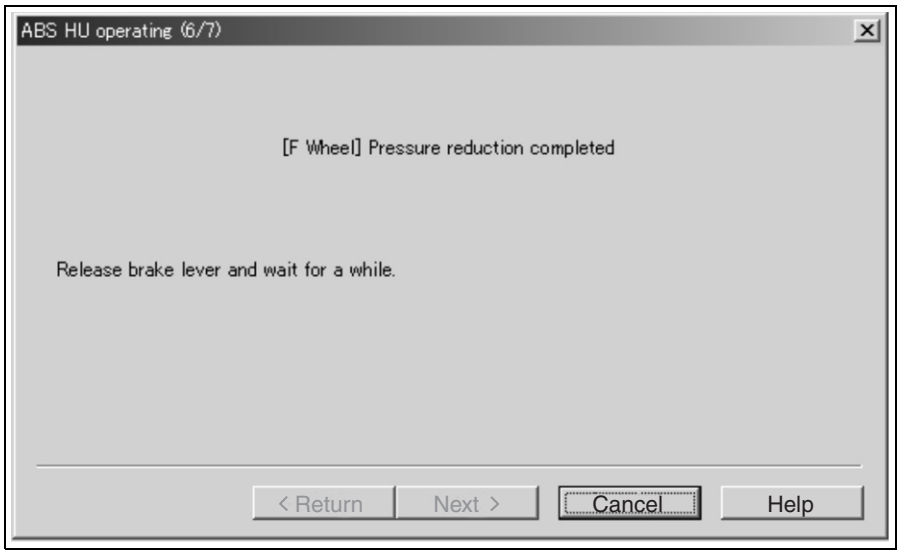
NOTE:

** If the front wheel is selected, place the motorcycle on the center stand and lift the front wheel off the ground using a jack.*

** Two operators are needed in this work; One should apply a rotational force to the front wheel.*


ABS HU operating (4/7)
Grip front brake lever and apply rotating force on F Wheel.
When getting ready, press "Next" button.
< Return
Next >
Cancel
Help

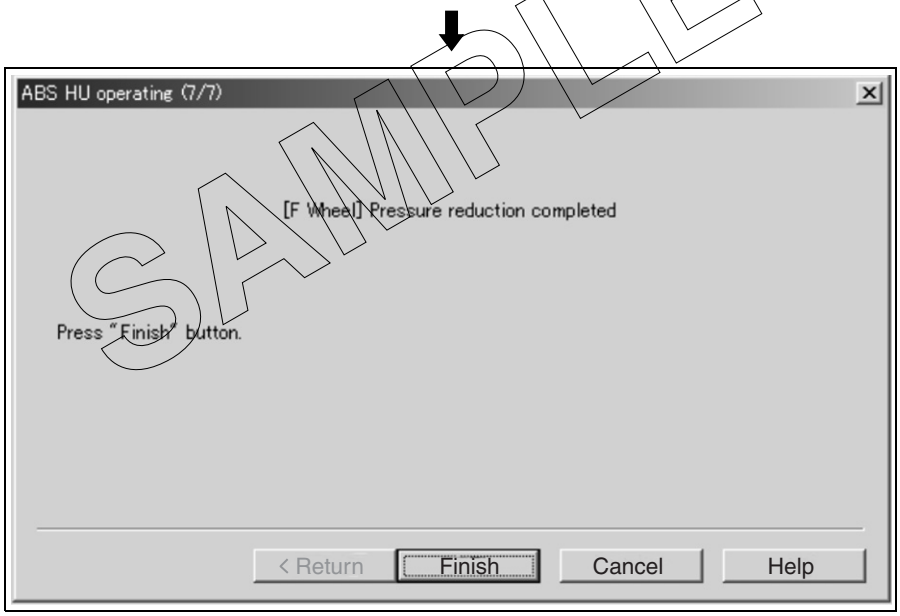
SAMPLE



NOTE:

** In normal cases, the front brake lever feels a reaction force and the front wheel turns discontinuously. At the same time, the ABS HU operating sound will be heard.*

** The ABS HU motor operates for 6 seconds and then stops automatically.*



SAMPLE

NOTE:

Inspect the rear brake as the same manner of front brake.

DTC TABLE

DTC (Diagnostic Trouble Code)	Malfunction cause	Indicator status	Page
None	Normal	ON *1	—
13/C1613	Wheel speed sensor rotor malfunction (F)	ON	☞Page 45
14/C1614	Wheel speed sensor rotor malfunction (R)	ON	☞Page 47
22/C1622	ABS actuator circuit malfunction (F)	ON	☞Page 49
23/C1623	ABS actuator circuit malfunction (R)	ON	☞Page 50
25/C1625	Wheel speed sensor related mulfunction	ON	☞Page 51
35/C1635	ABS motor malfunction	ON	☞Page 53
41/C1641	Wheel speed sensor signal malfunction (F) *2	ON	☞Page 54
42/C1642	Wheel speed sensor circuit open (F) *2	ON	☞Page 55
43/C1643	Wheel speed sensor circuit short (F) *2	ON	☞Page 57
44/C1644	Wheel speed sensor signal malfunction (R) *2	ON	☞Page 58
45/C1645	Wheel speed sensor circuit open (R) *2	ON	☞Page 59
46/C1646	Wheel speed sensor circuit short (R) *2	ON	☞Page 61
47/C1647	Supply voltage (Increased)	ON	☞Page 62
48/C1648	Supply voltage (Decreased)	ON	☞Page 64
55/C1655	ABS control unit malfunction	ON	☞Page 65
61/C1661	ABS solenoid malfunction	ON	☞Page 66

*1 It goes off after running at more than 10 km/h (6.2 mile/h).

*2 The wheel speed sensor lead wire is connected to the ABS control unit, but a short-circuit or faulty continuity inside the ABS control unit caused this DTC to appear, therefore, the ABS control unit/HU assembly must be replaced. An insufficient wheel speed sensor output voltage is the cause of a malfunction in which the ABS is activated even if the brakes are not suddenly applied. If this occurs frequently even though the wheel speed sensor is operating correctly, the ABS control unit/HU assembly should be replaced.

CAUTION

When disconnecting couplers and turning the ignition switch to ON, disconnect the ABS control unit coupler in order to prevent a DTC from being stored. Each time a resistance is measured, the ignition switch should be set to OFF.

SAMPLE

DTC TROUBLESHOOTING

DTC "13" (C1613): Wheel speed sensor rotor malfunction (F)

POSSIBLE CAUSE
• Front wheel speed sensor rotor distortion • Faulty front wheel speed sensor or wiring discontinuity, etc.

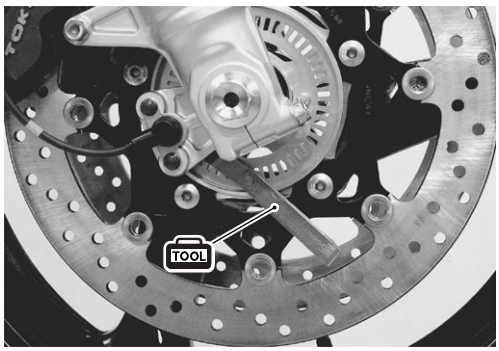
Step 1

1) Inspect the clearance between the front wheel speed sensor and sensor rotor using the thickness gauge.

DATA Wheel speed sensor – sensor rotor clearance:
0.3 – 1.5 mm (0.012 – 0.059 in)

TOOL 09900-20803: Thickness gauge
09900-20806: Thickness gauge

Is the clearance OK?

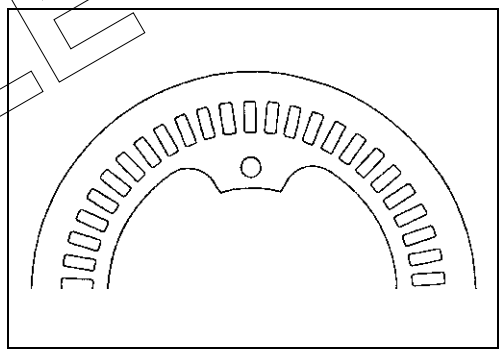


YES	Go to step 2.
NO	Adjust the clearance.

Step 2

1) Inspect the front wheel speed sensor rotor for damage and check that no foreign objects are caught in the rotor openings.

Is the sensor rotor OK?

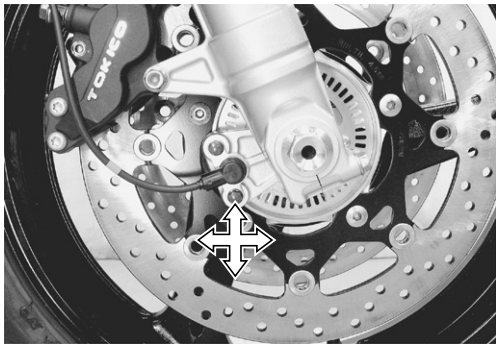


YES	Go to step 3.
NO	Clean or replace the sensor rotor.

Step 3

1) Check that the front wheel speed sensor is mounted steadily.

Is the sensor mounted steadily?



YES	Go to step 4.
NO	Tighten the mounting bolts or replace the bracket if necessary.

SAMPLE

Step 4

1) Inspect the front tire and wheel.

DATA **Type: DUNLOP D218F N 120/70ZR17M/C (58W)**

Tire pressure

Solo riding: 250 kPa (2.50 kgf/cm², 36 psi)

Dual riding: 250 kPa (2.50 kgf/cm², 36 psi)

Wheel runout

Service limit (axial and radial): 2.0 mm (0.08 in)

Are the front tire type, tire pressure and wheel runout OK?

YES	Replace the ABS control unit/HU.
NO	Adjust or replace the front tire and wheel.

SAMPLE

DTC "14" (C1614): Wheel speed sensor rotor malfunction (R)

POSSIBLE CAUSE
• Rear wheel speed sensor rotor distortion
• Faulty rear wheel speed sensor or wiring discontinuity, etc.

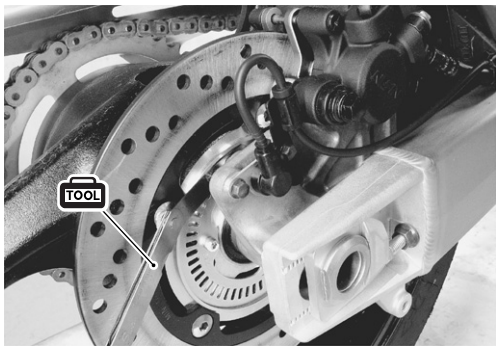
Step 1

1) Inspect the clearance between the rear wheel speed sensor and sensor rotor using the thickness gauge.

DATA Wheel speed sensor – sensor rotor clearance:
0.3 – 1.5 mm (0.012 – 0.059 in)

TOOL 09900-20803: Thickness gauge
09900-20806: Thickness gauge

Is the clearance OK?

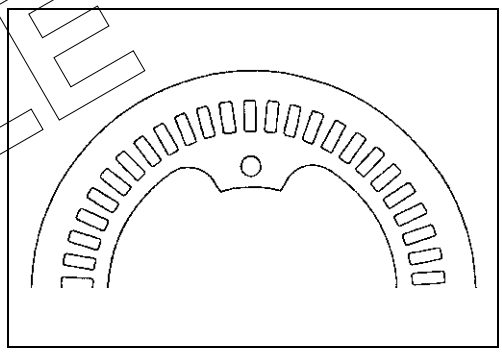


YES	Go to step 2.
NO	Adjust the clearance.

Step 2

1) Inspect the rear wheel speed sensor rotor for damage and check that no foreign objects are caught in the rotor openings.

Is the sensor rotor OK?

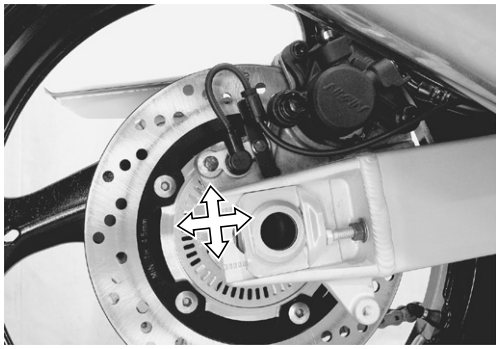


YES	Go to step 3.
NO	Clean or replace the sensor rotor.

Step 3

1) Check that the rear wheel speed sensor is mounted steadily.

Is the sensor mounted steadily?



YES	Go to step 4.
NO	Tighten the mounting bolts or replace the bracket if necessary.

SAMPLE

Step 4

1) Inspect the rear tire and wheel.

DATA **Type: DUNLOP D218N 180/55ZR17M/C (73W)**

Tire pressure

Solo riding: 250 kPa (2.50 kgf/cm², 36 psi)

Dual riding: 250 kPa (2.50 kgf/cm², 36 psi)

Wheel runout

Service limit (axial and radial): 2.0 mm (0.08 in)

Are the rear tire type, tire pressure and wheel runout OK?

YES	Replace the ABS control unit/HU.
NO	Adjust or replace the rear tire and wheel.

SAMPLE

DTC "22" (C1622): ABS actuator circuit malfunction (F)

POSSIBLE CAUSE
• Wire harness discontinuity • Front wheel locking, etc.

Step 1

1) Raise the front wheel off the ground and support the motorcycle with a jack or wooden block.
2) Inspect the dragging of the front brake.

Is there any dragging in the front brake?

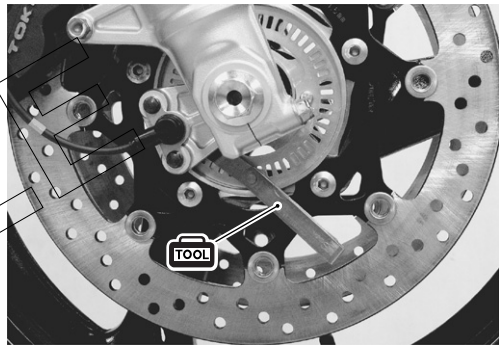
YES	Inspect the front brake master cylinder and the calipers.
NO	Go to step 2.

Step 2

1) Inspect the clearance between the front wheel speed sensor and sensor rotor using the thickness gauge.

DATA Wheel speed sensor – sensor rotor clearance:
0.3 – 1.5 mm (0.012 – 0.059 in)

TOOL 09900-20803: Thickness gauge
09900-20806: Thickness gauge



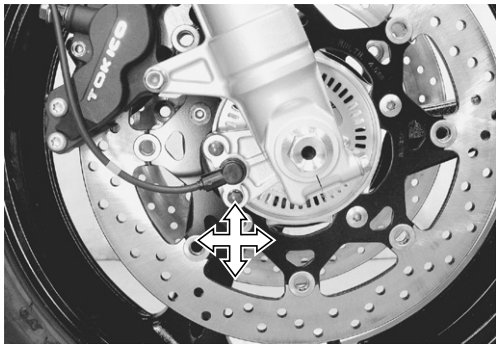
Is the clearance OK?

YES	Go to step 3.
NO	Adjust the clearance.

Step 3

1) Check that the front wheel speed sensor is mounted steadily.

Is the sensor mounted steadily?



YES	Replace the ABS control unit/HU.
NO	Tighten the mounting bolts or replace the bracket if necessary.

SAMPLE

DTC "23" (C1623): ABS actuator circuit malfunction (R)

POSSIBLE CAUSE
• Wire harness discontinuity • Rear wheel locking, etc.

Step 1

1) Support the motorcycle with its center stand.
2) Inspect the dragging of the rear brake.

Is there any dragging in the rear brake?

YES	Inspect the rear brake master cylinder and the caliper.
NO	Go to step 2.

Step 2

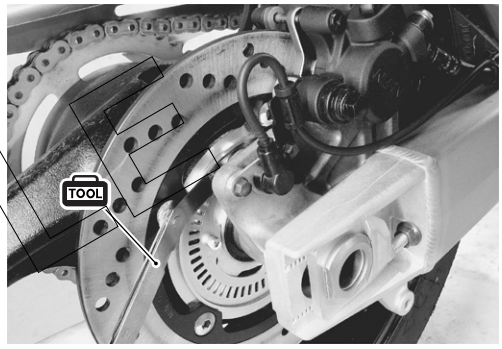
1) Inspect the clearance between the rear wheel speed sensor and sensor rotor using the thickness gauge.

DATA Wheel speed sensor – sensor rotor clearance:
0.3 – 1.5 mm (0.012 – 0.059 in)

TOOL 09900-20803: Thickness gauge
09900-20806: Thickness gauge

Is the clearance OK?

YES	Go to step 3.
NO	Adjust the clearance.

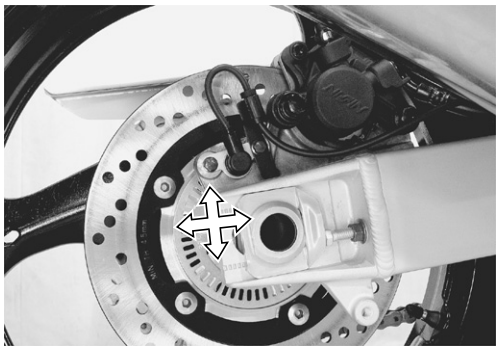


Step 3

1) Check that the rear wheel speed sensor is mounted steadily.

Is the sensor mounted steadily?

YES	Replace the ABS control unit/HU.
NO	Tighten the mounting bolts or replace the bracket if necessary.



SAMPLE

DTC "25" (C1625): Wheel speed sensor related mulfunction

POSSIBLE CAUSE
• Incorrect tire size, poor tire pressure • Deformed wheel, etc.

Step 1

1) Check that the specified tires are installed.

TIRE TYPE:

Front: DUNLOP D218F N 120/70ZR17M/C (58W)
Rear: DUNLOP D218N 180/55ZR17M/C (73W)

Are the tires OK?

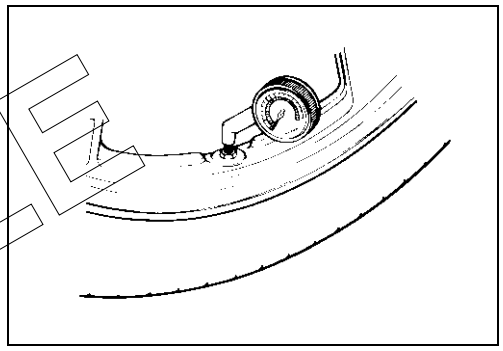
YES	Go to step 2.
NO	Use the specified tires.

Step 2

1) Make sure the tire pressure for each tire.
(☞GSF1200K6/SK6 0B-15)

COLD INFLATION TIRE PRESSURE	SOLO RIDING			DUAL RIDING		
	kPa	kgf/cm²	psi	kPa	kgf/cm²	psi
FRONT	250	2.50	36	250	2.50	36
REAR	250	2.50	36	250	2.50	36

Is the tire pressure for each tire correct?



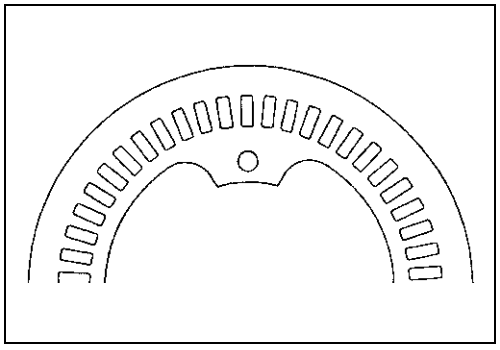
YES	Go to step 3.
NO	Adjust the tire pressure.

SAMPLE

Step 3

1) Inspect both wheel speed sensor rotors for damage and check that no foreign objects are caught in the rotor openings.

Are the rotors OK?



YES	Go to step 4.
NO	Clean or replace the rotor.

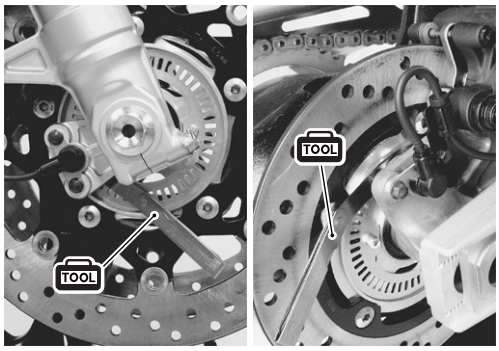
Step 4

1) Inspect the clearances of the front and rear wheel speed sensor – sensor rotor using the thickness gauge.

DATA Wheel speed sensor – sensor rotor clearance:
0.3 – 1.5 mm (0.012 – 0.059 in)

TOOL 09900-20803: Thickness gauge
09900-20806: Thickness gauge

Are the clearances OK?



YES	Replace the ABS control unit/HU.
NO	Adjust the clearance.

SAMPLE

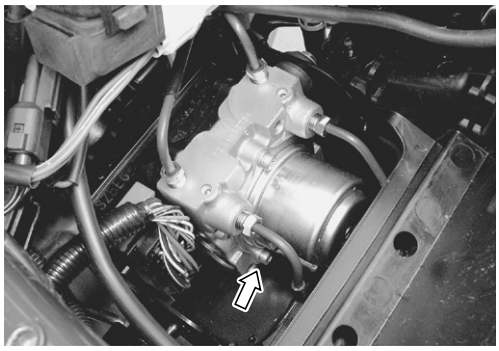
DTC "35" (C1635): ABS motor malfunction

POSSIBLE CAUSE
• Faulty HU motor • Faulty wiring, etc.

Step 1

1) Inspect if the pump motor makes turning noise by setting the ignition switch to ON from OFF when the vehicle stands still.

   Does the pump motor make any turning noise?



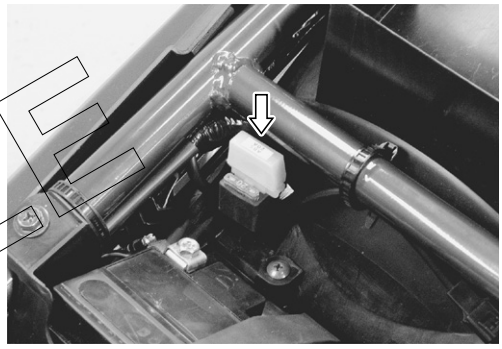
YES	Faulty HU motor Replace the ABS control unit/HU.
NO	Go to step 2.

Step 2

1) Remove the seat. (☞GSF1200K6/SK6 9D-5)
2) Inspect the ABS motor fuse.

   ABS motor fuse: 20 A

   Is the HU motor fuse OK?



YES	Go to step 3.
NO	Replace the HU motor fuse.

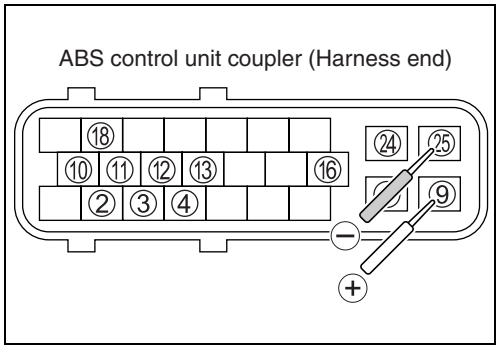
CAUTION

If a fuse is blown, find the cause of the problem and correct it before replacing the fuse.

SAMPLE

Step 3

1) Turn the ignition switch to OFF.
2) Remove the left frame cover. (☞GSF1200K6/SK6 9D-5)
3) Remove the fuse box mounting bolt. (☞Page 28)
4) Check the ABS control unit coupler for loose or poor contacts. If OK, then disconnect the ABS control unit coupler.
5) Measure the voltage between ⑨ (R/B) and ㉕ (B/W) at the coupler.



DATA Normal value: Battery voltage (12.0 V and more)

TOOL 09900-25008: Multi-circuit tester set

Tester knob indication: Voltage (⎓)

Is the voltage between ⑨ and ㉕ normal?

YES	Replace the ABS control unit/HU.
NO	Inspect the wire harness. (Faulty motor power supply or ground wire)

DTC "41" (C1641): Wheel speed sensor signal malfunction (F)

POSSIBLE CAUSE
• Poor contact on the front wheel speed sensor coupler • Faulty front wheel speed sensor, etc.

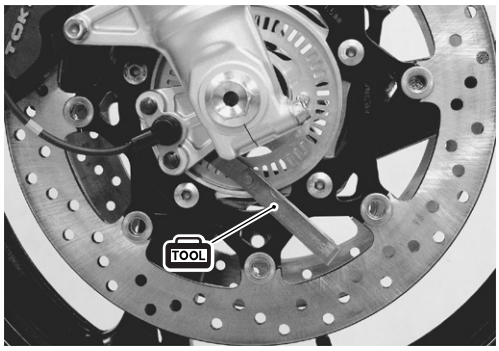
Step 1

1) Inspect the clearance between the front wheel speed sensor and sensor rotor using the thickness gauge.

DATA Wheel speed sensor – sensor rotor clearance:
0.3 – 1.5 mm (0.012 – 0.059 in)

TOOL 09900-20803: Thickness gauge
09900-20806: Thickness gauge

Is the clearance OK?

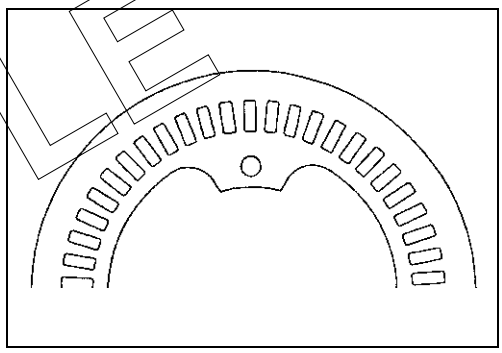


YES	Go to step 2.
NO	Adjust the clearance.

Step 2

1) Inspect the front wheel speed sensor rotor for damage and check that no foreign objects are caught in the rotor openings.

Is the sensor rotor OK?

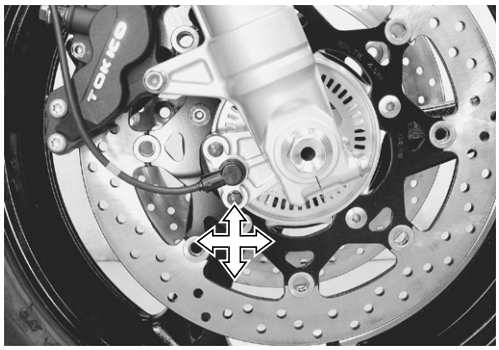


YES	Go to step 3.
NO	Clean or replace the sensor rotor.

Step 3

1) Check that the front wheel speed sensor is mounted steadily.

Is the sensor mounted steadily?



YES	Go to DTC "42". (☞Page 55)
NO	Tighten the mounting bolts or replace the bracket if necessary.

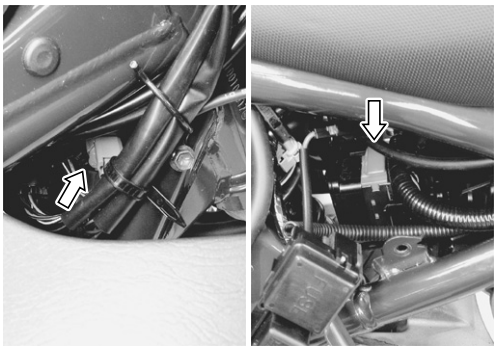
SAMPLE

DTC "42" (C1642): Wheel speed sensor circuit open (F)

POSSIBLE CAUSE
• Poor contact on the front wheel speed sensor coupler
• Faulty front wheel speed sensor, etc.

Step 1

1) Turn the ignition switch to OFF.
2) Remove the right frame head cover. (GSF1200A) (☞GSF1200K6/SK6 9D-6)
3) Remove the left frame cover. (☞GSF1200K6/SK6 9D-5)
4) Remove the fuse box mounting bolt. (☞Page 28)
5) Check the ABS control unit coupler and front wheel speed sensor coupler for loose or poor contacts. If OK, then disconnect the ABS control unit coupler.



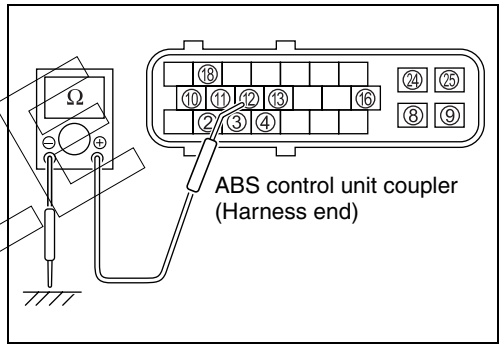
6) Measure the resistance between ⑫ (B/R) and ground at the ABS control unit coupler.

DATA Normal value: ∞ Ω (Infinity)

TOOL 09900-25008: Multi-circuit tester set
09900-25009: Needle pointed probe set

Tester knob indication: Resistance (Ω)

Is the resistance between ⑫ and ground OK?



YES	Go to step 3.
NO	Go to step 2.

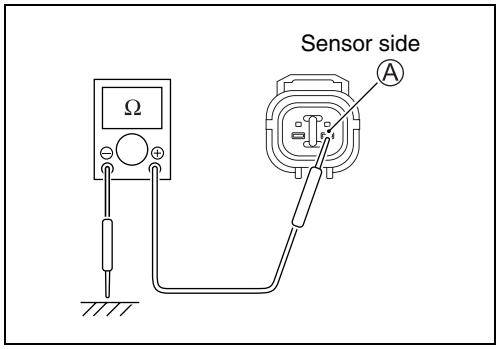
Step 2

1) Disconnect the front wheel speed sensor coupler.
2) Measure the resistance between Ⓐ (Black) and ground at the front wheel speed sensor coupler.

DATA Normal value: ∞ Ω (Infinity)

Tester knob indication: Resistance (Ω)

Is the resistance between Ⓐ and ground OK?



YES	Inspect the wire harness. (Faulty B/R wire)
NO	Faulty front wheel speed sensor

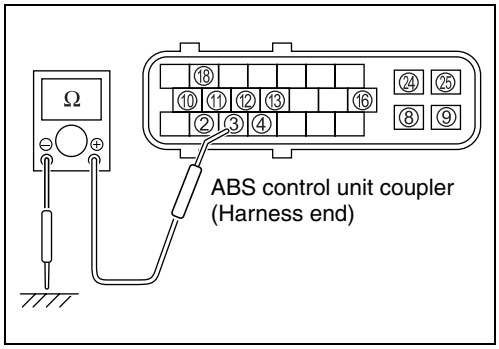
Step 3

1) Measure the resistance between ③ (W/R) and ground at the ABS control unit coupler.

DATA Normal value: ∞ Ω (Infinity)

Tester knob indication: Resistance (Ω)

Is the resistance between ③ and ground OK?



YES	Go to step 5.
NO	Go to step 4.

SAMPLE

Step 4

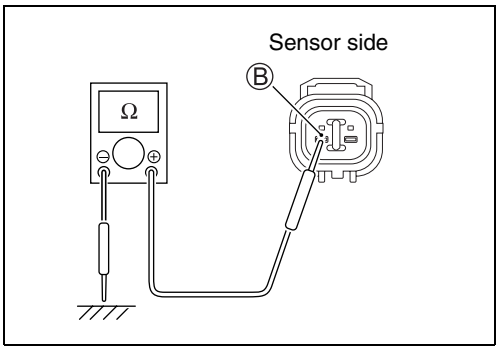
1) Measure the resistance between Ⓑ (White) and ground at the front wheel speed sensor coupler.

DATA Normal value: ∞ Ω (Infinity)

Tester knob indication: Resistance (Ω)

Is the resistance between Ⓑ and ground OK?

YES	Inspect the wire harness. (Faulty W/R wire)
NO	Faulty front wheel speed sensor



Step 5

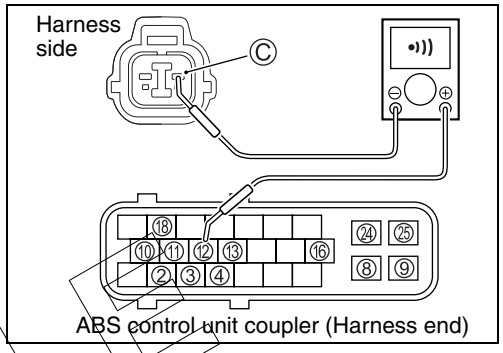
1) Check for continuity between ⑫ (B/R) on the ABS control unit coupler and Ⓒ (B/R) on the front wheel speed sensor coupler.

DATA Normal value: Continuity (•)))

Tester knob indication: Continuity test (•)))

Is there continuity between ⑫ and Ⓒ?

YES	Go to step 6.
NO	Inspect the wire harness. (Faulty B/R wire)



Step 6

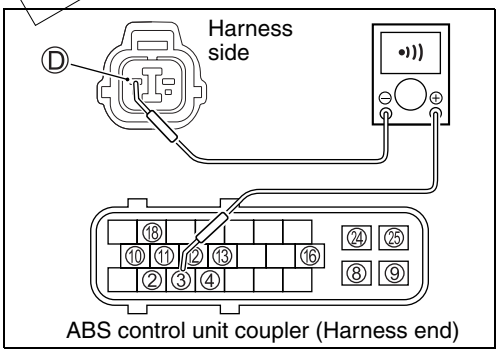
1) Check for continuity between ③ (W/R) on the ABS control unit coupler and Ⓓ (W/R) on the front wheel speed sensor coupler.

DATA Normal value: Continuity (•)))

Tester knob indication: Continuity test (•)))

Is there continuity between ③ and Ⓓ?

YES	Go to step 7.
NO	Inspect the wire harness. (Faulty W/R wire)



Step 7

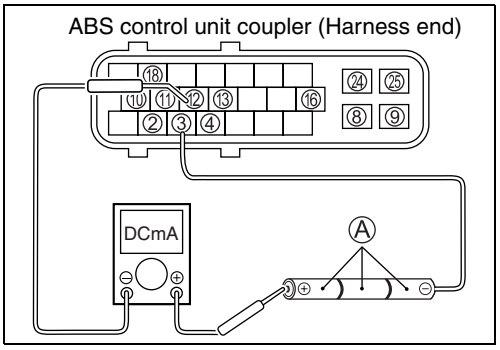
1) Connect the front wheel speed sensor coupler.
2) Connect three 1.5 V dry cells Ⓐ in series as shown and make sure that their total voltage is more than 4.5 V.
   Measure the current between ⊕ dry cell terminal and ⑫ (B/R) on the ABS control unit coupler.

DATA Normal value: 3 – 14 mA

Tester knob indication: Current (⎓, 20 mA)

Is the current OK?

YES	Replace the ABS control unit/HU.
NO	Faulty front wheel speed sensor.



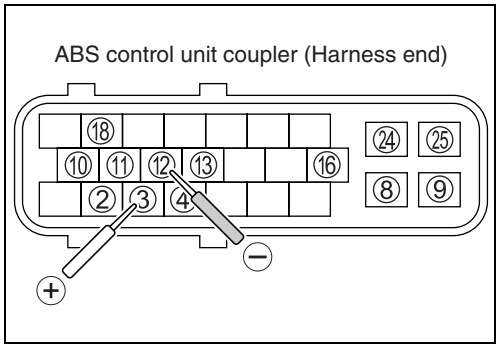
SAMPLE

DTC "43" (C1643): Wheel speed sensor circuit short (F)

POSSIBLE CAUSE
• Poor contact on the front wheel speed sensor coupler • Faulty front wheel speed sensor, etc.

Step 1

1) Turn the ignition switch to OFF.
2) Remove the left frame cover. (☞GSF1200K6/SK6 9D-5)
3) Remove the fuse box mounting bolt. (☞Page 28)
4) Check the ABS control unit coupler for loose or poor contacts. If OK, then disconnect the ABS control unit coupler.
5) Check for continuity between ③ (W/R) and ⑫ (B/R) at the coupler.



TOOL 09900-25008: Multi-circuit tester set

Tester knob indication: Continuity (•)))

Is there continuity between ③ and ⑫?

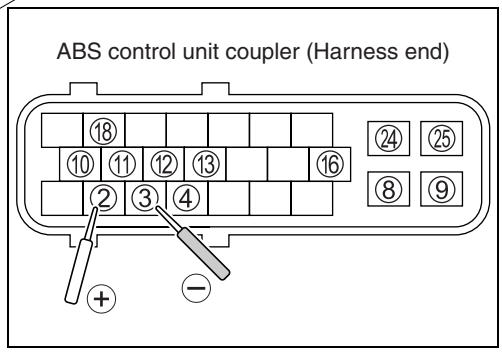
YES	Inspect the wire harness. (Faulty sensor wire) Faulty front wheel speed sensor
NO	Go to step 2.

Step 2

1) Check for continuity between ② (B/Y) and ③ (W/R) at the coupler.

Tester knob indication: Continuity (•)))

Is there continuity between ② and ③?



YES	Inspect the wire harness. (Faulty sensor wire) Faulty wheel speed sensor
NO	Go to step 3.

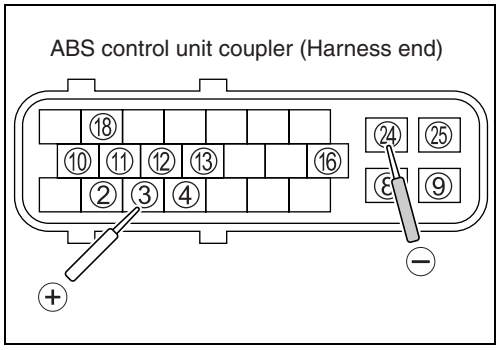
Step 3

1) Turn the ignition switch to ON with the ABS control unit coupler disconnected, measure the voltage between ③ (W/R) and ㉔ (B/W) at the coupler.

DATA Normal value: 0 V

Tester knob indication: Voltage (⎓)

Is the voltage between ③ and ㉔ normal value?



YES	Replace the ABS control unit/HU.
NO	Inspect the wire harness. (Faulty sensor signal or power supply wire)

SAMPLE

DTC "44" (C1644): Wheel speed sensor signal malfunction (R)

POSSIBLE CAUSE
• Poor contact on the rear wheel speed sensor coupler • Faulty rear wheel speed sensor, etc.

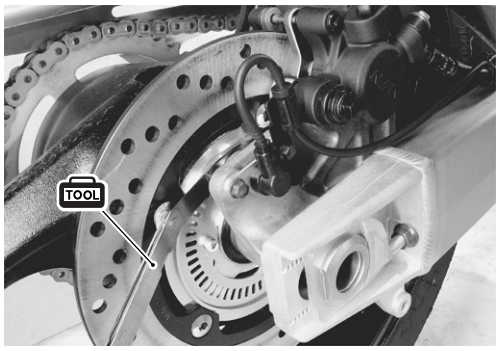
Step 1

1) Inspect the clearance between the rear wheel speed sensor and sensor rotor using the thickness gauge.

DATA Wheel speed sensor – sensor rotor clearance:
0.3 – 1.5 mm (0.012 – 0.059 in)

TOOL 09900-20803: Thickness gauge
09900-20806: Thickness gauge

Is the clearance OK?

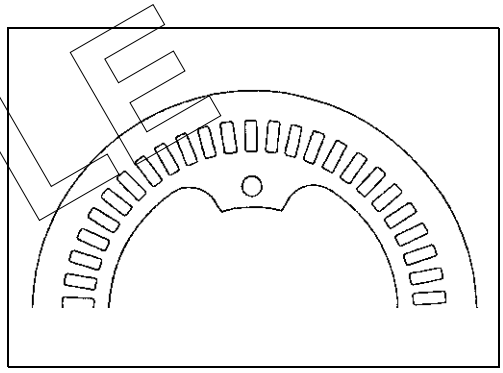


YES	Go to step 2.
NO	Adjust the clearance.

Step 2

1) Inspect the rear wheel speed sensor rotor for damage and check that no foreign objects are caught in the rotor openings.

Is the sensor rotor OK?

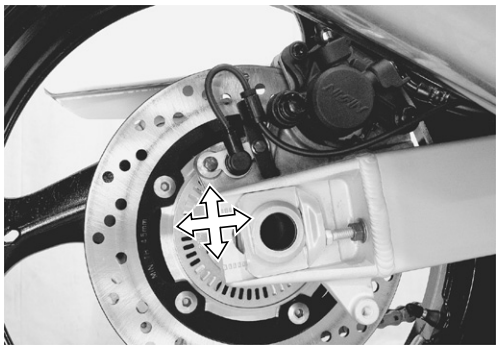


YES	Go to step 3.
NO	Clean or replace the sensor rotor.

Step 3

1) Check that the rear wheel speed sensor is mounted steadily.

Is the sensor mounted steadily?



YES	Go to DTC "45". (☞Page 59)
NO	Tighten the mounting bolts or replace the bracket if necessary.

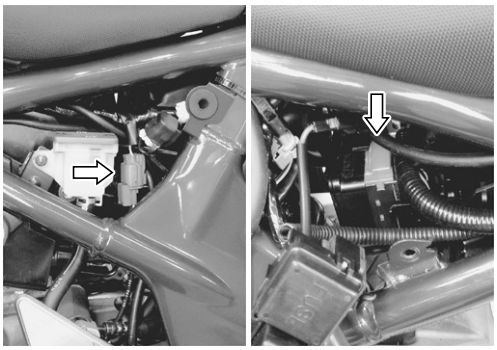
SAMPLE

DTC "45" (C1645): Wheel speed sensor circuit open (R)

POSSIBLE CAUSE
• Poor contact on the rear wheel speed sensor coupler • Faulty rear wheel speed sensor, etc.

Step 1

1) Turn the ignition switch to OFF.
2) Remove the frame covers, left and right. (☞GSF1200K6/SK6 9D-5)
3) Remove the fuse box mounting bolt. (☞Page 28)
4) Check the ABS control unit coupler and rear wheel speed sensor coupler for loose or poor contacts. If OK, then disconnect the ABS control unit coupler.



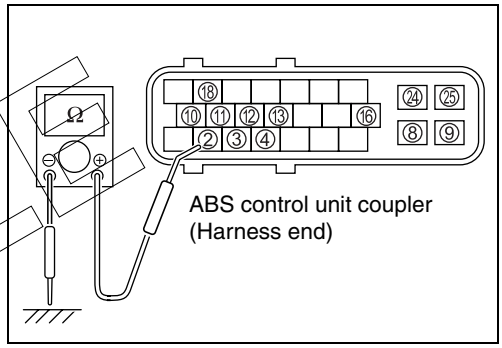
5) Measure the resistance between ② (B/Y) and ground at the ABS control unit coupler.

DATA Normal value: ∞ Ω (Infinity)

TOOL 09900-25008: Multi-circuit tester set
09900-25009: Needle pointed probe set

Tester knob indication: Resistance (Ω)

Is the resistance between ② and ground OK?



YES	Go to step 3.
NO	Go to step 2.

SAMPLE

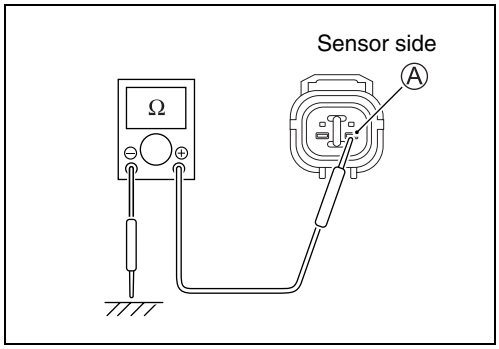
Step 2

1) Disconnect the rear wheel speed sensor coupler.
2) Measure the resistance between Ⓐ (Black) and ground at the rear wheel speed sensor coupler.

DATA Normal value: ∞ Ω (Infinity)

Tester knob indication: Resistance (Ω)

Is the resistance between Ⓐ and ground OK?



YES	Inspect the wire harness. (Faulty B/Y wire)
NO	Replace the rear wheel speed sensor.

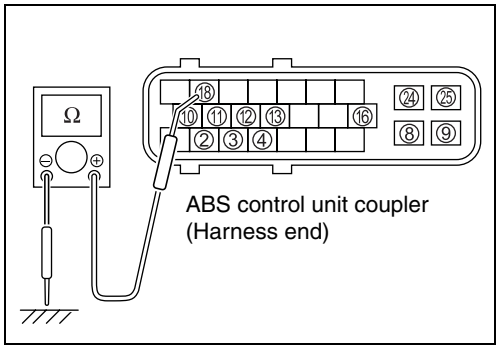
Step 3

1) Measure the resistance between ⑱ (W/Y) and ground at the ABS control unit coupler.

DATA Normal value: ∞ Ω (Infinity)

Tester knob indication: Resistance (Ω)

Is the resistance between ⑱ and ground OK?



YES	Go to step 5.
NO	Go to step 4.

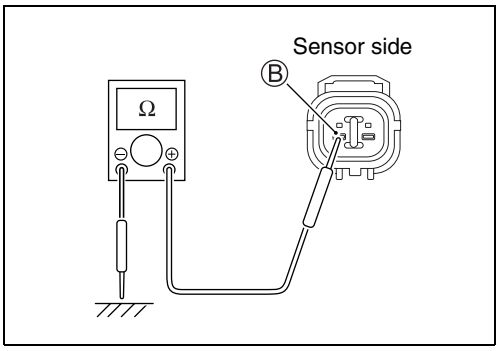
Step 4

1) Measure the resistance between Ⓑ (White) and ground at the rear wheel speed sensor coupler.

DATA Normal value: ∞ Ω (Infinity)

Is the resistance between Ⓑ and ground OK?

YES	Inspect the wire harness. (Faulty W/Y wire)
NO	Replace the rear wheel speed sensor.



Step 5

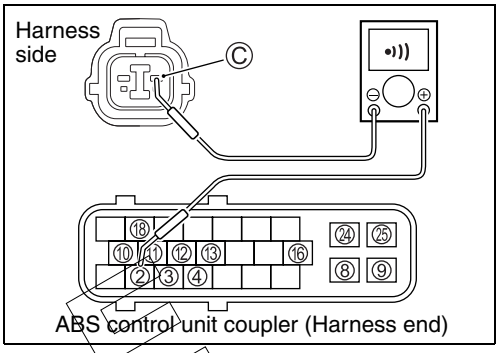
1) Check for continuity between ② (B/Y) on the ABS control unit coupler and Ⓒ (B/Y) on the rear wheel speed sensor coupler.

DATA Normal value: Continuity (•)))

Tester knob indication: Continuity test (•)))

Is there continuity between ② and Ⓒ?

YES	Go to step 6.
NO	Inspect the wire harness. (Faulty B/Y wire)



Step 6

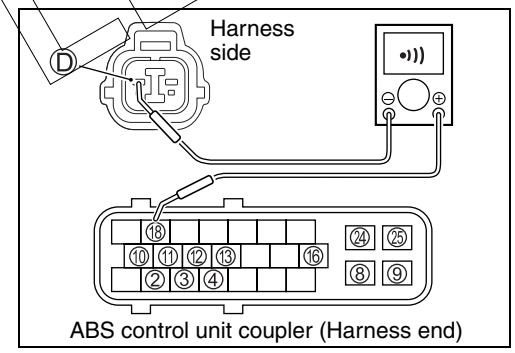
1) Check the continuity between ⑱ (W/Y) on the ABS control unit coupler and Ⓓ (W/Y) on the rear wheel speed sensor coupler.

DATA Normal value: Continuity (•)))

Tester knob indication: Continuity test (•)))

Is there continuity between ⑱ and Ⓓ?

YES	Go to step 7.
NO	Inspect the wire harness. (Faulty W/Y wire)



Step 7

1) Connect the rear wheel speed sensor coupler.
2) Connect three 1.5 V dry cells Ⓐ in series as shown and make sure that their total voltage is more than 4.5 V.
   Measure the current between ⊕ dry cell terminal and ② (B/Y) on the ABS control unit coupler.

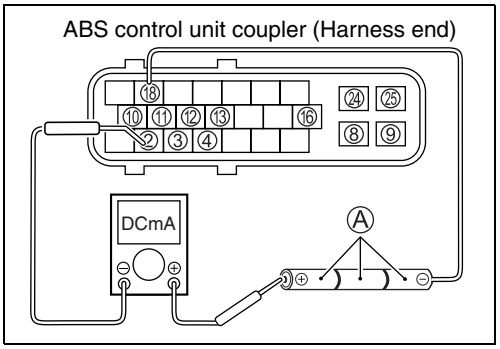
DATA Normal value: 3 – 14 mA

TOOL 09900-25008: Multi-circuit tester set
09900-25009: Needle pointed probe set

Tester knob indication: Current (⎓, 20 mA)

Is the current OK?

YES	Replace the ABS control unit/HU.
NO	Replace the rear wheel speed sensor.



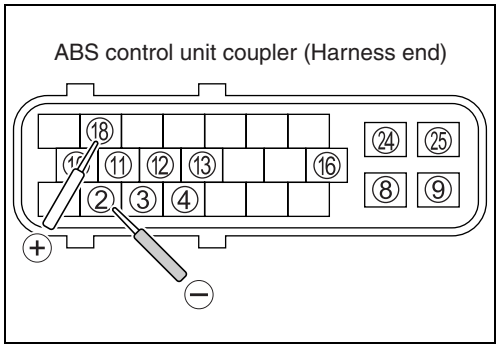
SAMPLE

DTC "46" (C1646): Wheel speed sensor circuit short (R)

POSSIBLE CAUSE
• Poor contact on the rear wheel speed sensor coupler • Faulty rear wheel speed sensor, etc.

Step 1

1) Turn the ignition switch to OFF.
2) Remove the left frame cover. (☞GSF1200K6/SK6 9D-5)
3) Remove the fuse box mounting bolt. (☞Page 28)
4) Check the ABS control unit coupler for loose or poor contacts. If OK, then disconnect the ABS control unit coupler.
5) Check for continuity between ② (B/Y) and ⑱ (W/Y) at the coupler.



09900-25008: Multi-circuit tester set

Tester knob indication: Continuity (•)))

Is there continuity between ② and ⑱?

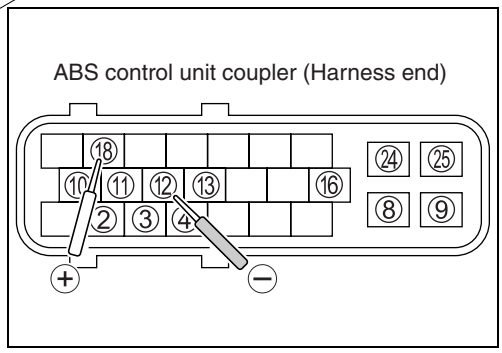
YES	Inspect the wire harness. (Faulty sensor wire) Faulty rear wheel speed sensor.
NO	Go to step 2.

Step 2

1) Check for continuity between ⑫ (B/R) and ⑱ (W/Y) at the coupler.

Tester knob indication: Continuity (•)))

Is there continuity between ⑫ and ⑱?



YES	Inspect the wire harness. (Faulty sensor wire) Faulty wheel speed sensor.
NO	Go to step 3.

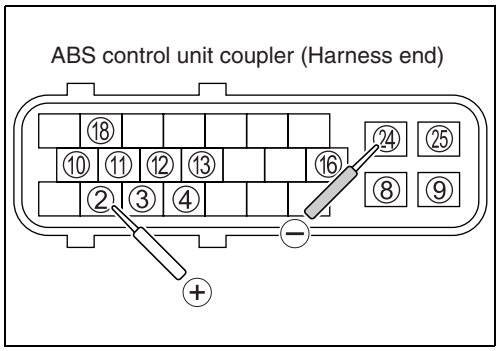
Step 3

1) Turn the ignition switch to ON with the ABS control unit coupler disconnected, measure the voltage between ② (B/Y) and ㉔ (B/W) at the coupler.

Normal value: 0 V

Tester knob indication: Voltage (⎓)

Is the voltage between ② and ㉔ 0 V?



YES	Replace the ABS control unit/HU.
NO	Inspect the wire harness. (Faulty sensor signal or power supply wire)

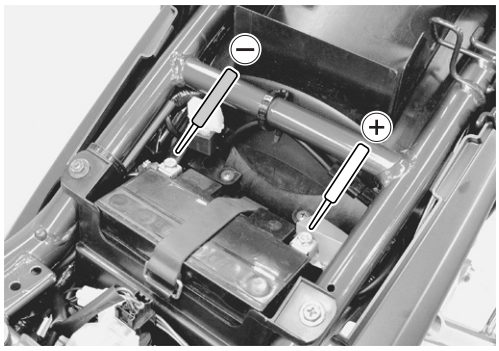
SAMPLE

DTC "47" (C1647): Supply voltage (Increased)

POSSIBLE CAUSE
• Faulty alternator • Faulty ABS control unit • Faulty wire harness, etc.

Step 1

1) Remove the seat. (☞GSF1200K6/SK6 9D-5)
2) Measure the voltage between the ⊕ and ⊖ battery terminals using the multi-circuit tester.



DATA Battery voltage: 12.0 V and more

TOOL 09900-25008: Multi-circuit tester set

Tester knob indication: Voltage (⎓)

Is the voltage over 12 V?

YES	Go to step 2.
NO	Charge or replace the battery.

Step 2

1) Run the engine at 5 000 r/min with the dimmer switch set to HI.
2) Measure the voltage between the ⊕ and ⊖ battery terminals.

DATA Regulated voltage: 13.5 – 15.0 V at 5 000 r/min

TOOL 09900-25008: Multi-circuit tester set

Tester knob indication: Voltage (⎓)

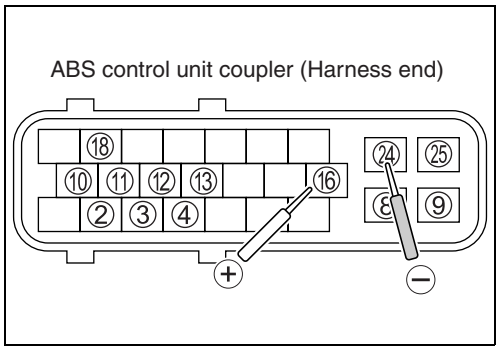
Is the voltage 13.5 – 15.0 V?

YES	Go to step 3.
NO	Inspect the generator. (☞GSF1200K6/SK6 1J-10)

SAMPLE

Step 3

1) Turn the ignition switch to OFF.
2) Remove the left frame cover. (☞GSF1200K6/SK6 9D-5)
3) Remove the fuse box mounting bolt. (☞Page 28)
4) Check the ABS control unit coupler for loose or poor contacts. If OK, then disconnect the ABS control unit coupler.
5) Run the engine at 5 000 r/min with the dimmer switch set to HI.
6) Measure the voltage between ⑯ (O/Y) and ㉔ (B/W) at the coupler.



Tester knob indication: Voltage (⎓)

Is the voltage same as step 2 above?

YES	Replace the ABS control unit/HU.
NO	Inspect the wire harness. (Faulty ignition or ground wire)

SAMPLE

DTC "48" (C1648): Supply voltage (Decreased)

POSSIBLE CAUSE
• Faulty alternator • Faulty battery • Faulty wire harness, etc.

Step 1

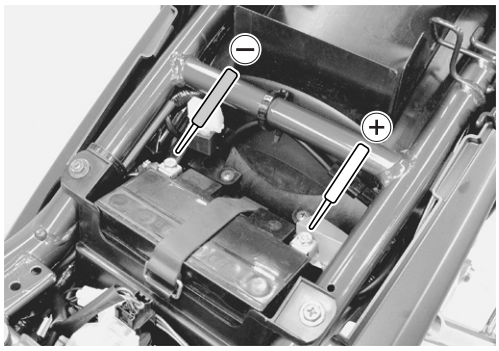
1) Remove the seat. (☞GSF1200K6/SK6 9D-5)
2) Measure the voltage between the ⊕ and ⊖ battery terminals using the multi-circuit tester.

DATA Battery voltage: 12.0 V and more

TOOL 09900-25008: Multi-circuit tester set

Tester knob indication: Voltage (⎓)

Is the voltage over 12 V?



YES	Go to step 2.
NO	Charge or replace the battery.

Step 2

1) Run the engine at 5 000 r/min with the dimmer switch set to HI.
2) Measure the voltage between the ⊕ and ⊖ battery terminals.

DATA Regulated voltage: 13.5 – 15.0 V at 5 000 r/min

Tester knob indication: Voltage (⎓)

Is the voltage 13.5 – 15.0 V?

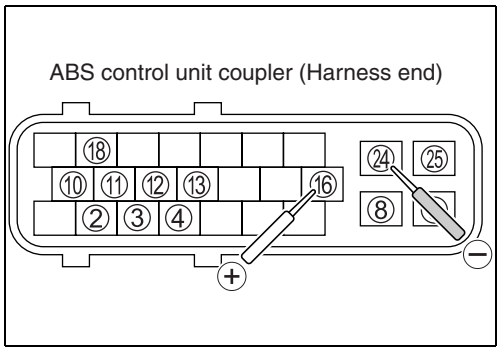
YES	Go to step 3.
NO	Inspect the generator (☞GSF1200K6/SK6 1J-10)

Step 3

1) Turn the ignition switch to OFF.
2) Remove the left frame cover. (☞GSF1200K6/SK6 9D-5)
3) Remove the fuse box mounting bolt. (☞Page 28)
4) Check the ABS control unit coupler for loose or poor contacts. If OK, then disconnect the ABS control unit coupler.
5) Run the engine at 5 000 r/min with the dimmer switch set to HI.
6) Measure the voltage between ⑯ (O/Y) and ㉔ (B/W) at the coupler.

Tester knob indication: Voltage (⎓)

Is the voltage same as step 2 above?



YES	Replace the ABS control unit/HU.
NO	Inspect the wire harness. (Faulty ignition or ground wire)

SAMPLE

DTC "55" (C1655): ABS control unit malfunction

POSSIBLE CAUSE
Faulty ABS control unit

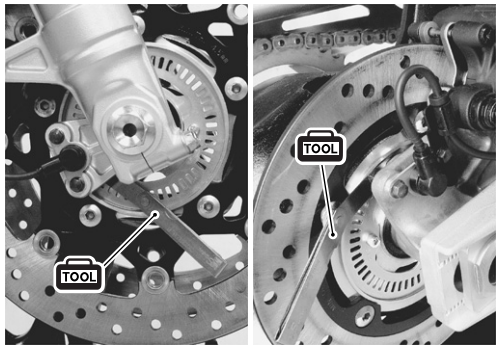
Step 1

1) Inspect the clearances of the front and rear wheel speed sensor – sensor rotor using the thickness gauge.

DATA Wheel speed sensor – sensor rotor clearance:
0.3 – 1.5 mm (0.012 – 0.059 in)

TOOL 09900-20803: Thickness gauge
09900-20806: Thickness gauge

Are the clearances OK?

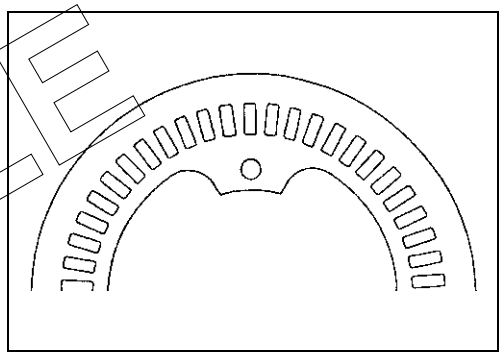


YES	Go to step 2.
NO	Adjust the clearance.

Step 2

1) Inspect both of the wheel speed sensor rotors for damage and check that no foreign objects are caught in the rotor openings.

Are the rotors OK?

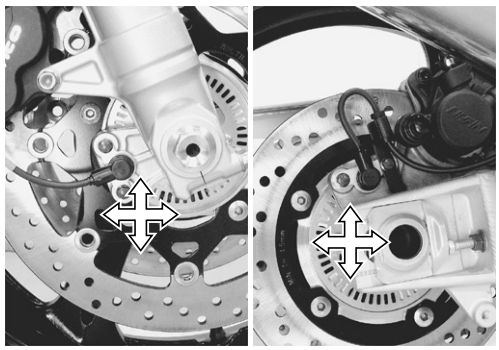


YES	Go to step 3.
NO	Clean or replace the rotor.

Step 3

1) Check that the front and rear wheel speed sensors are mounted steadily.

Are the sensors mounted steadily?

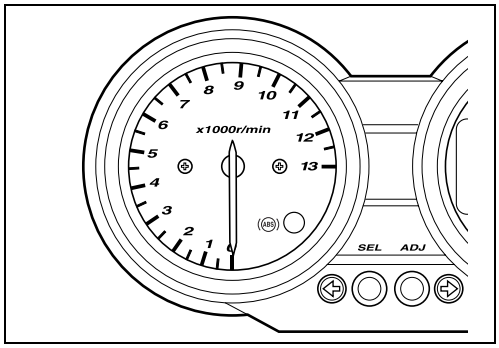


YES	Go to step 4.
NO	Tighten the mounting bolts or replace the bracket if necessary.

Step 4

1) Delete DTCs (☞Page 34) and repeat the code output procedure.

If the DTC 55 is output again, the ABS control unit/HU should be replaced.



SAMPLE

DTC "61" (C1661): ABS solenoid malfunction

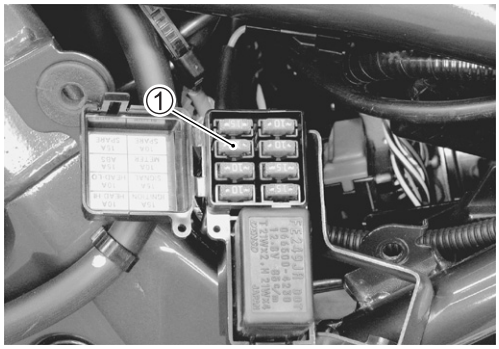
POSSIBLE CAUSE
Faulty solenoid valve or relay

Step 1

1) Turn the ignition switch to OFF.
2) Remove the fuse box mounting bolt. (☞Page 28)
3) Open the fuse box and inspect the ABS fuse ①.

ABS fuse: 15 A

Is the ABS fuse OK?



YES	Go to step 2.
NO	Replace the ABS fuse.

CAUTION

If a fuse is blown, find the cause of the problem and correct it before replacing the fuse.

Step 2

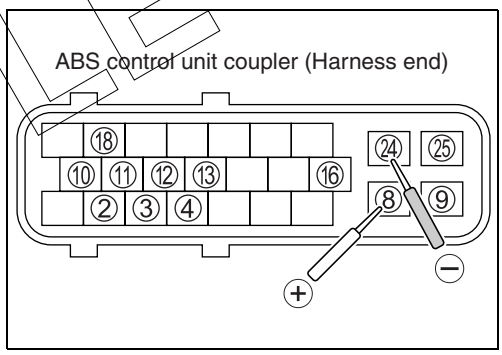
1) Check the ABS control unit coupler for loose or poor contacts. If OK, then disconnect the ABS control unit coupler.
2) Measure the voltage between ⑧ (R/Bl) and ㉔ (B/W) at the coupler.

DATA Normal value: Battery voltage (12.0 V and more)

TOOL 09900-25008: Multi-circuit tester set

Tester knob indication: Voltage (⎓)

Is the voltage between ⑧ and ㉔ normal?



YES	Replace the ABS control unit/HU.
NO	Inspect the wire harness. (Faulty solenoid or ground wire)

SAMPLE

IRREPARABLE MALFUNCTIONS

Even though the ABS is operating correctly, a DTC is memorized in any of the following conditions.

Conditions
• If the motorcycle is put on its centerstand, the engine is started and only the rear wheel is rotated.
• Previous malfunctions were repaired, but the DTCs were not deleted.

- After carrying out DTC deleting and ABS operation check (☞Page 34), explain to the customer that the ABS is operating correctly.

ABS COMPONENT REMOVAL, INSPECTION AND INSTALLATION

FRONT WHEEL SPEED SENSOR/SENSOR ROTOR

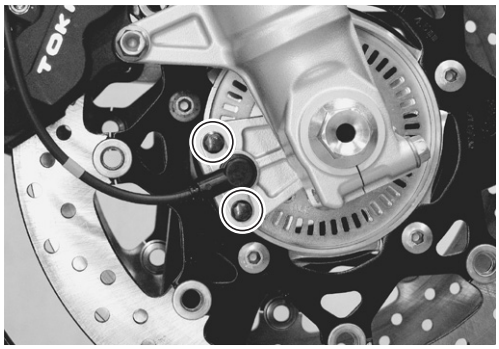
REMOVAL

CAUTION

*** The ABS is made up of many precision parts; never subject it to strong impacts or allow it to become dirty or dusty.**
*** Do not hit the sensor rotor when dismounting the wheel.**
*** The wheel speed sensor cannot be disassembled.**

SAMPLE

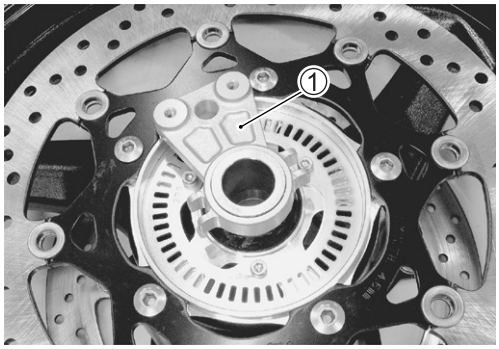
- Raise the front wheel off the ground and support the motorcycle with a jack or wooden block.
- Remove the front wheel speed sensor mounting bolts.
- Remove the front wheel assembly. (☞GSF1200K6/SK6 2D-4)



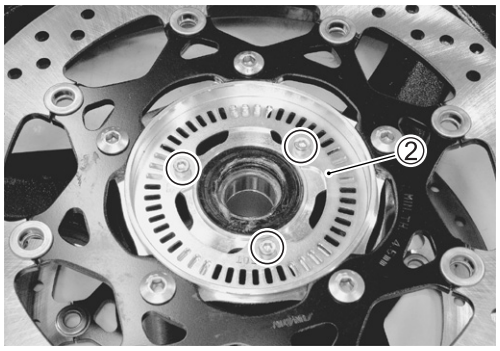
⚠ WARNING

Make sure that the motorcycle is supported securely.

- Remove the front wheel speed sensor bracket ①.



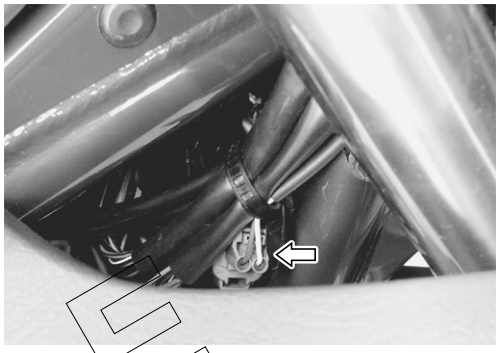
• Remove the front wheel speed sensor rotor ②.



CAUTION

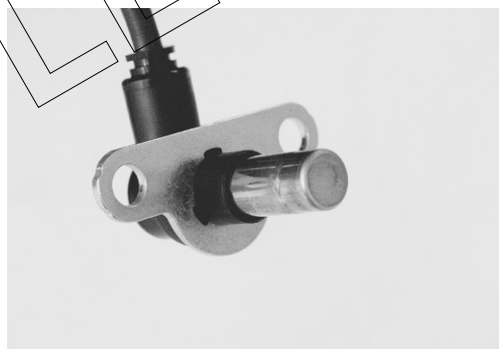
When replacing the tire, make sure not to damage the sensor rotor.

• Remove the right frame head cover. (GSF1200) (☞GSF1200K6/SK6 9D-6)
• Disconnect the coupler clamp and remove the front wheel speed sensor.



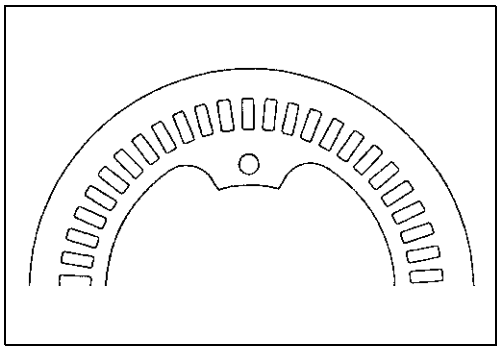
INSPECTION

• Inspect the wheel speed sensor for damage.
• Clean the sensor if any metal particle or foreign material stuck on it.



SAMPLE

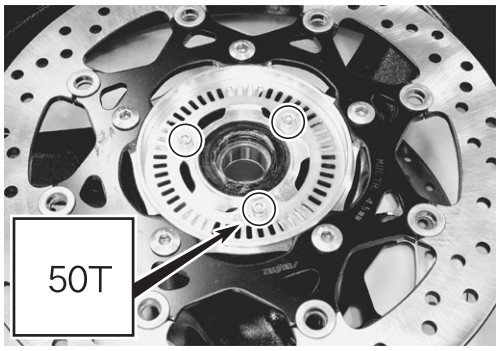
• Check that no wheel speed sensor rotor teeth are broken and that no foreign objects are caught in the wheel speed sensor.



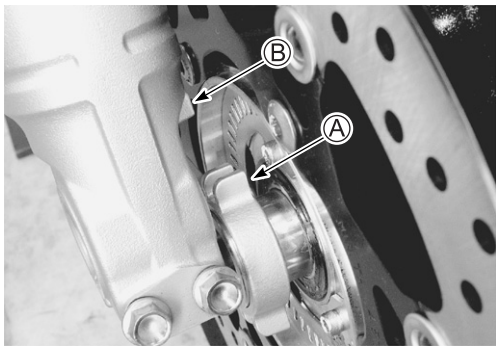
INSTALLATION

Installation is in the reverse order of removal. Pay attention to the following points:

• Install the wheel speed sensor rotor as the letters "50T" face outside.



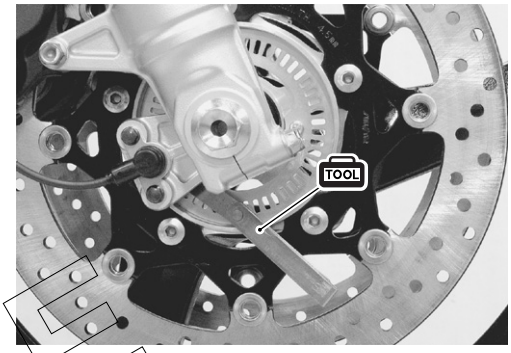
• Align the recess Ⓐ on the speed sensor bracket with the stopper Ⓑ on the right front fork.



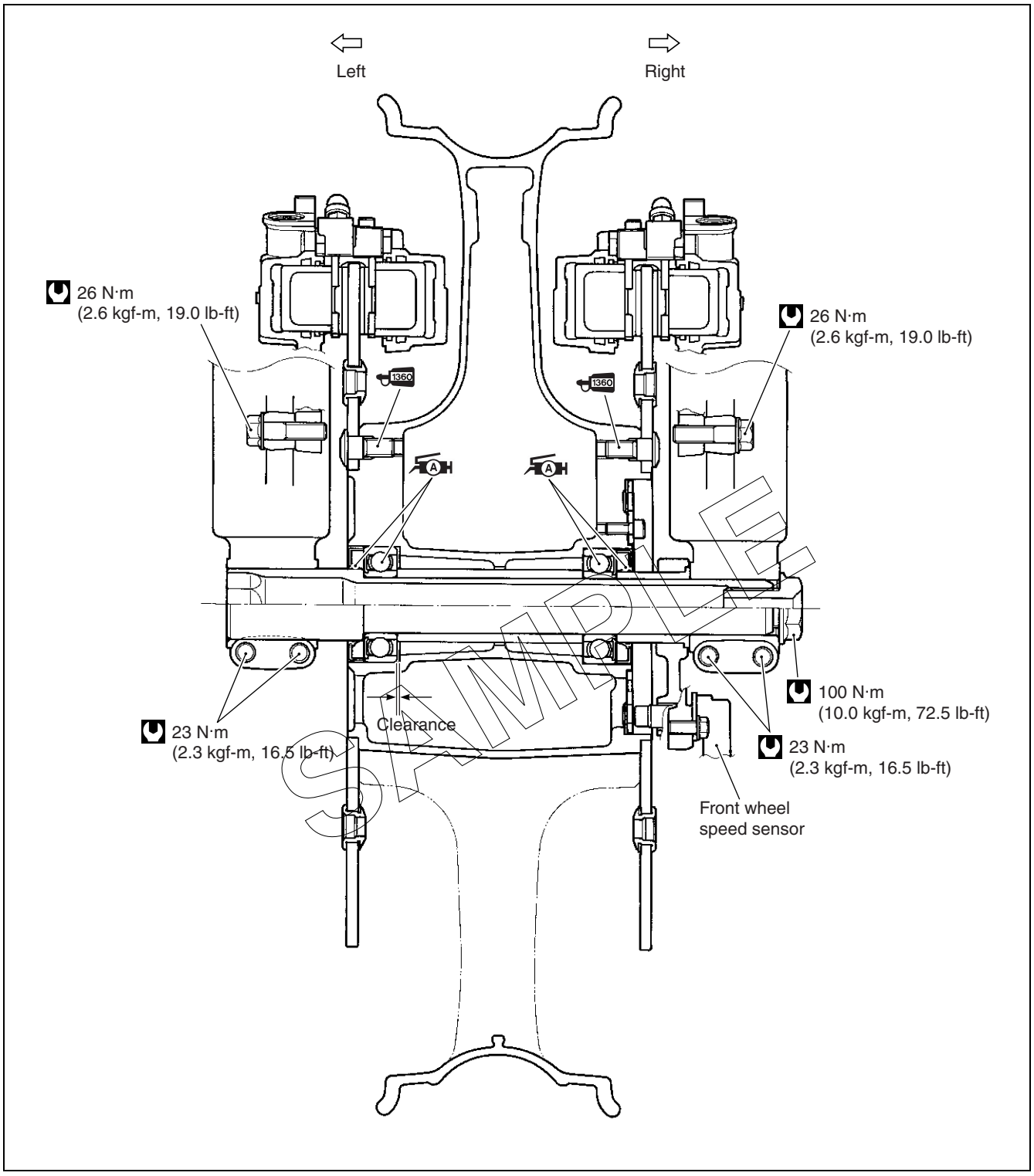
• Check the clearance between the front wheel speed sensor and sensor rotor using the thickness gauge.

DATA Wheel speed sensor – sensor rotor clearance:
0.3 – 1.5 mm (0.012 – 0.059 in)

TOOL 09900-20803: Thickness gauge
09900-20806: Thickness gauge



SAMPLE


Left
Right
26 N·m
(2.6 kgf-m, 19.0 lb-ft)
26 N·m
(2.6 kgf-m, 19.0 lb-ft)
1360
1360
A
A
Clearance
23 N·m
(2.3 kgf-m, 16.5 lb-ft)
100 N·m
(10.0 kgf-m, 72.5 lb-ft)
23 N·m
(2.3 kgf-m, 16.5 lb-ft)
Front wheel
speed sensor

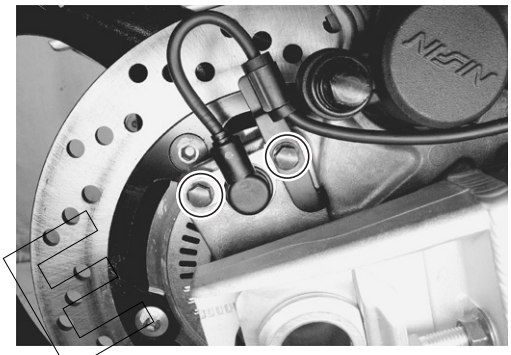
SAMPLE

REAR WHEEL SPEED SENSOR/SENSOR ROTOR REMOVAL

CAUTION

*** The ABS is made up of many precision parts; never subject it to strong impacts or allow it to become dirty or dusty.**
*** Do not hit the sensor rotor when dismounting the wheel.**
*** The wheel speed sensor cannot be disassembled.**

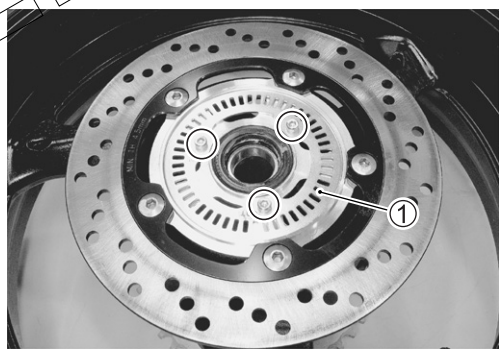
- Support the motorcycle with its center stand.
- Remove the rear wheel speed sensor mounting bolts.
- Remove the rear wheel assembly. (☞GSF1200K6/SK6 2D-11)



⚠ WARNING

Make sure that the motorcycle is supported securely.

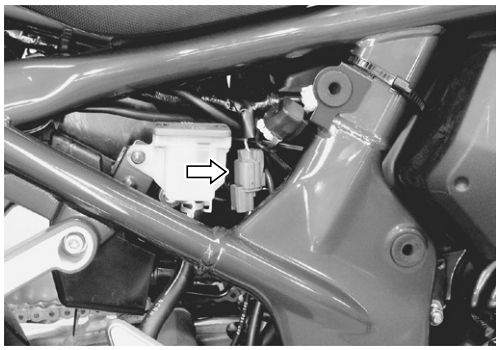
- Remove the rear wheel speed sensor rotor ①.



CAUTION

When replacing the tire, make sure not to damage the sensor rotor.

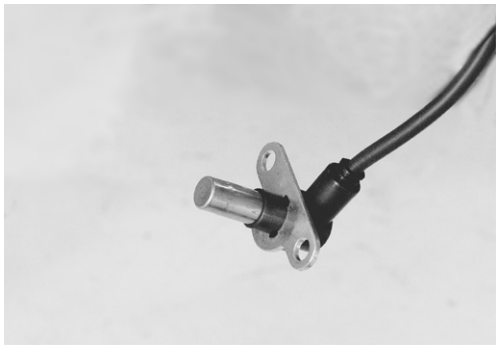
- Remove the right frame cover. (☞GSF1200K6/SK6 2D-11)
- Disconnect the coupler and remove the rear wheel speed sensor from the clamps.



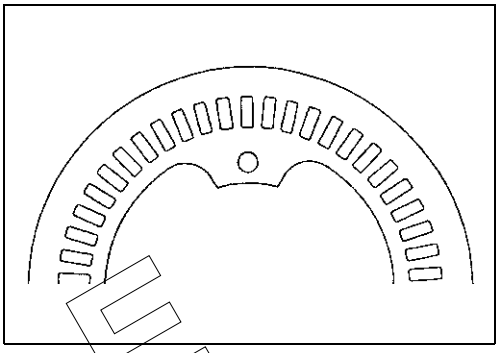
SAMPLE

INSPECTION

- Inspect the wheel speed sensor for damage.
- Clean the sensor if any metal particle or foreign material stuck on it.



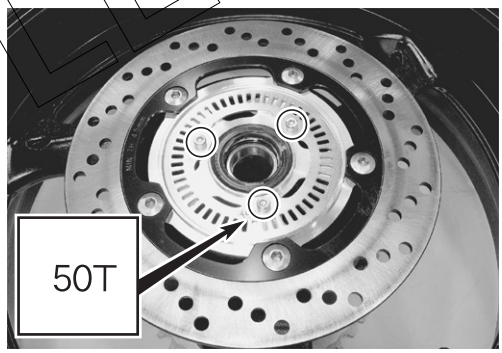
- Check that no wheel speed sensor rotor teeth are broken and that no foreign objects are caught in the wheel speed sensor.



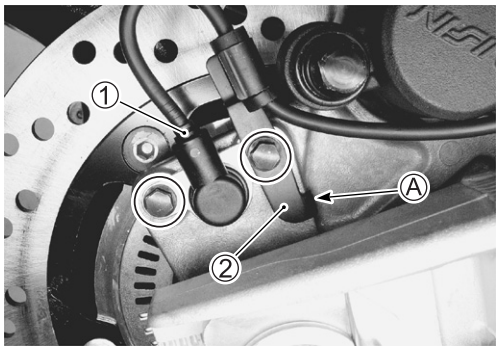
INSTALLATION

Installation is in the reverse order of removal. Pay attention to the following points:

- Install the wheel speed sensor rotor as the letters "50T" face outside.



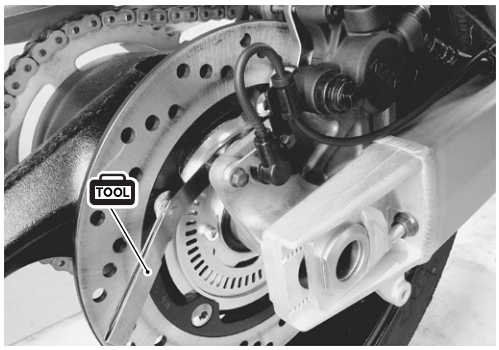
- Install the speed sensor ① with the stopper end Ⓐ of the wiring harness guide ② brought in contact with the caliper bracket.



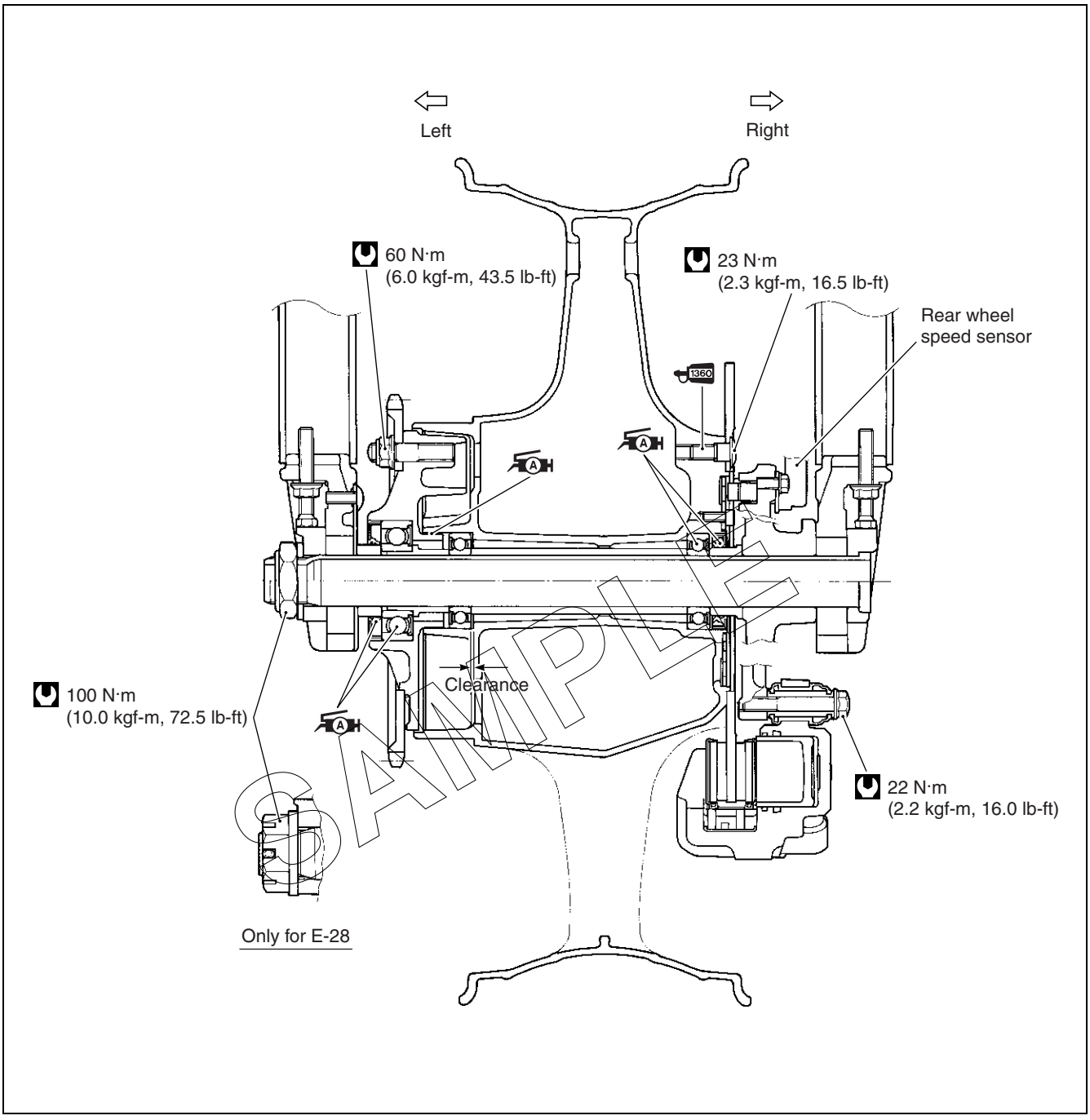
- Check the clearance between the rear wheel speed sensor and sensor rotor using the thickness gauge.

DATA Wheel speed sensor – sensor rotor clearance:
0.3 – 1.5 mm (0.012 – 0.059 in)

TOOL 09900-20803: Thickness gauge
09900-20806: Thickness gauge



SAMPLE


Left
Right
60 N·m
(6.0 kgf-m, 43.5 lb-ft)
23 N·m
(2.3 kgf-m, 16.5 lb-ft)
Rear wheel
speed sensor
1360
A
Clearance
100 N·m
(10.0 kgf-m, 72.5 lb-ft)
22 N·m
(2.2 kgf-m, 16.0 lb-ft)
Only for E-28
SAMPLE

ABS CONTROL UNIT/HU
REMOVAL

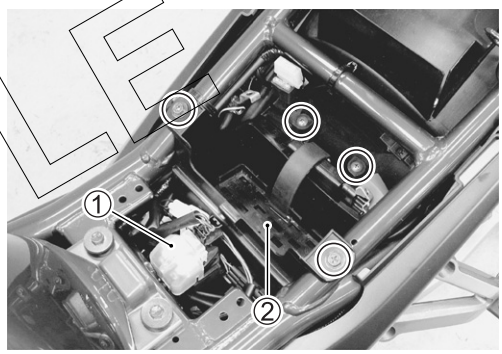
⚠ WARNING

When storing the brake fluid, seal the container completely and keep away from children.

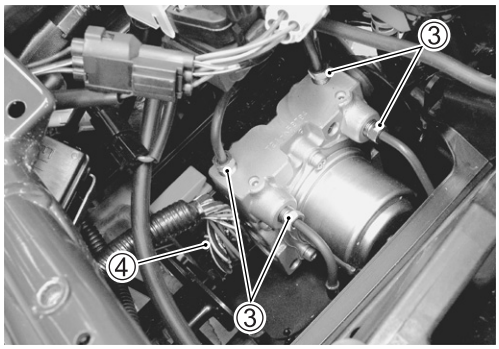
CAUTION

*** This brake system is filled with an ethylene glycol-based DOT 4 brake fluid. Do not mix different types of fluid such as silicone-based or petroleum-based.**
*** Do not use any brake fluid taken from old, used or unsealed containers. Never reuse brake fluid left over from the last servicing or stored for long periods.**
*** Handle brake fluid with care: the fluid reacts chemically with paint, plastics, rubber materials etc. and will damage then severely.**
*** The ABS is made up of many precision parts; never subject it to strong impacts or allow it to become dirty or dusty.**
*** The ABS control unit/HU cannot be disassembled.**

- Remove the seat. (☞GSF1200K6/SK6 9D-5)
- Remove the battery. (☞GSF1200K6/SK6 1J-15)
- Remove the starter relay ① from the battery case ②.
- Remove the battery case ②.

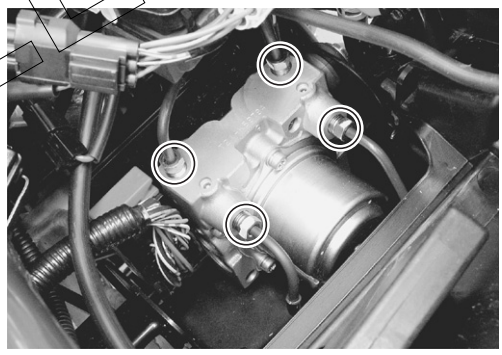


- Drain the brake fluid. (☞GSF1200K6/SK6 4A-6)
- Loosen the flare nuts ③ and disconnect the brake pipes.
- Disconnect the ABS control unit coupler ④.



SAMPLE

- Remove the reservoir mounting bolt. (☞GSF1200K6/SK6 4A-12)
- Remove the ABS control unit/HU by removing the mounting bolts.



INSTALLATION

Installation is in the reverse order of removal. Pay attention to the following points.

- Tighten the brake pipe flare nuts to the specified torque.

Brake pipe flare nut: 16 N·m (1.6 kgf-m, 11.5 lb-ft)

CAUTION

*** Route the brake hoses and pipes correctly. (☞Page 78 to 80)**
*** Make sure to hold the brake pipe when tightening the flare nut, or it may be misaligned.**

- Bleed air from the brake fluid circuit. (☞GSF1200K6/SK6 4A-5)

⚠ WARNING

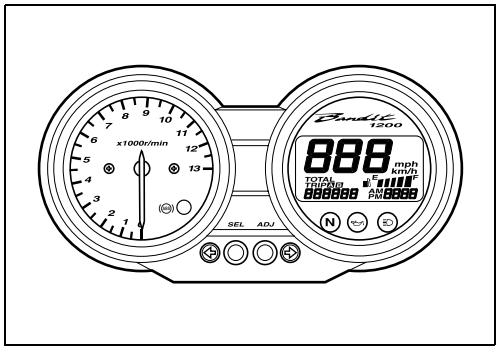
Never ride the motorcycle before bleeding the air.

SAMPLE

COMBINATION METER

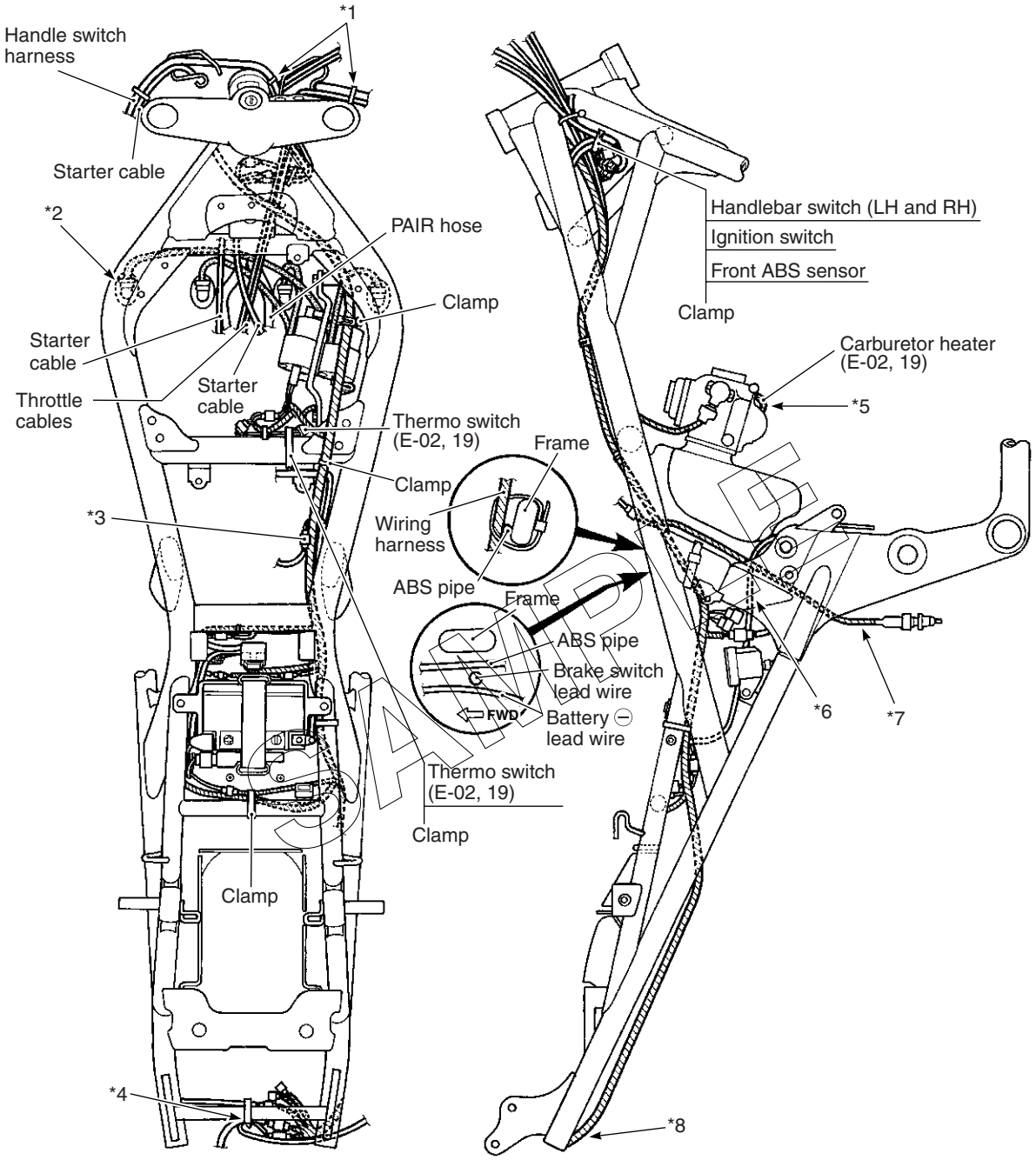
LED (LIGHT EMITTING DIODE) INSPECTION

- Check that the LEDs (ABS indicator light, Oil pressure indicator light and meter panel illumination) immediately light up when the ignition switch is turned to ON.
- Check that other LEDs (Neutral indicator light, High-beam indicator light and Turn signal indicator lights) light up/go off by operating each switch.
- If abnormal condition is found, replace the combination meter unit with a new one after checking its wire harness/coupler.

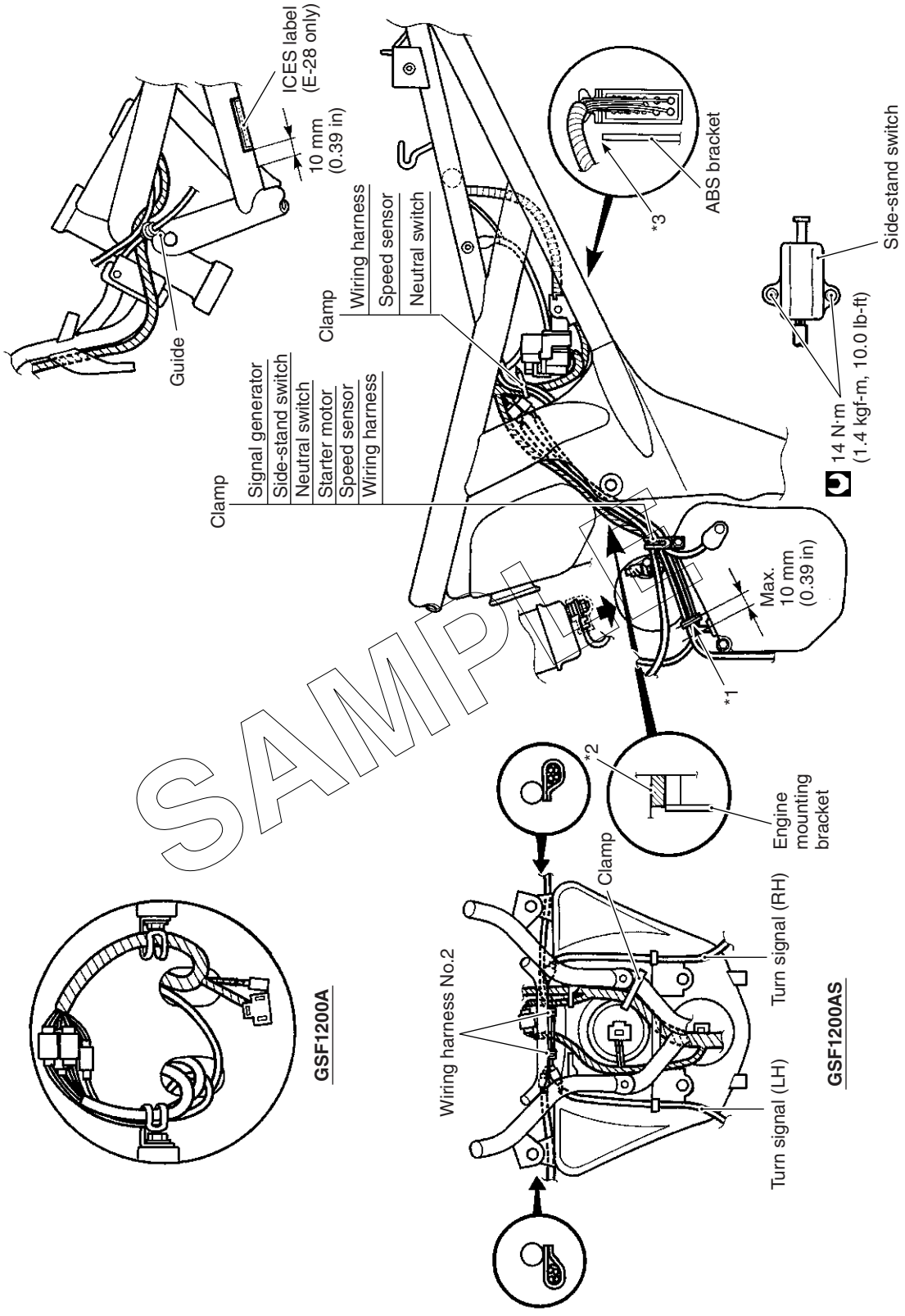


WIRE HARNESS, HOSE ROUTING AND SENSOR INSTALLATION

WIRE HARNESS ROUTING



*1	Cut the tip of wire clamp after clamping.	*5	Pass through the lead wire between No.3 and No.4 carburetors.
*2	Set the plug cap forward.	*6	Pass through the battery ⊖ lead wire inside of the brake hose.
*3	Don't pull this lead wire.	*7	Pass through the harness between the hose and frame.
*4	Tip of wire clamp backward.	*8	Be careful not to pinch the wiring harness between fender and frame.

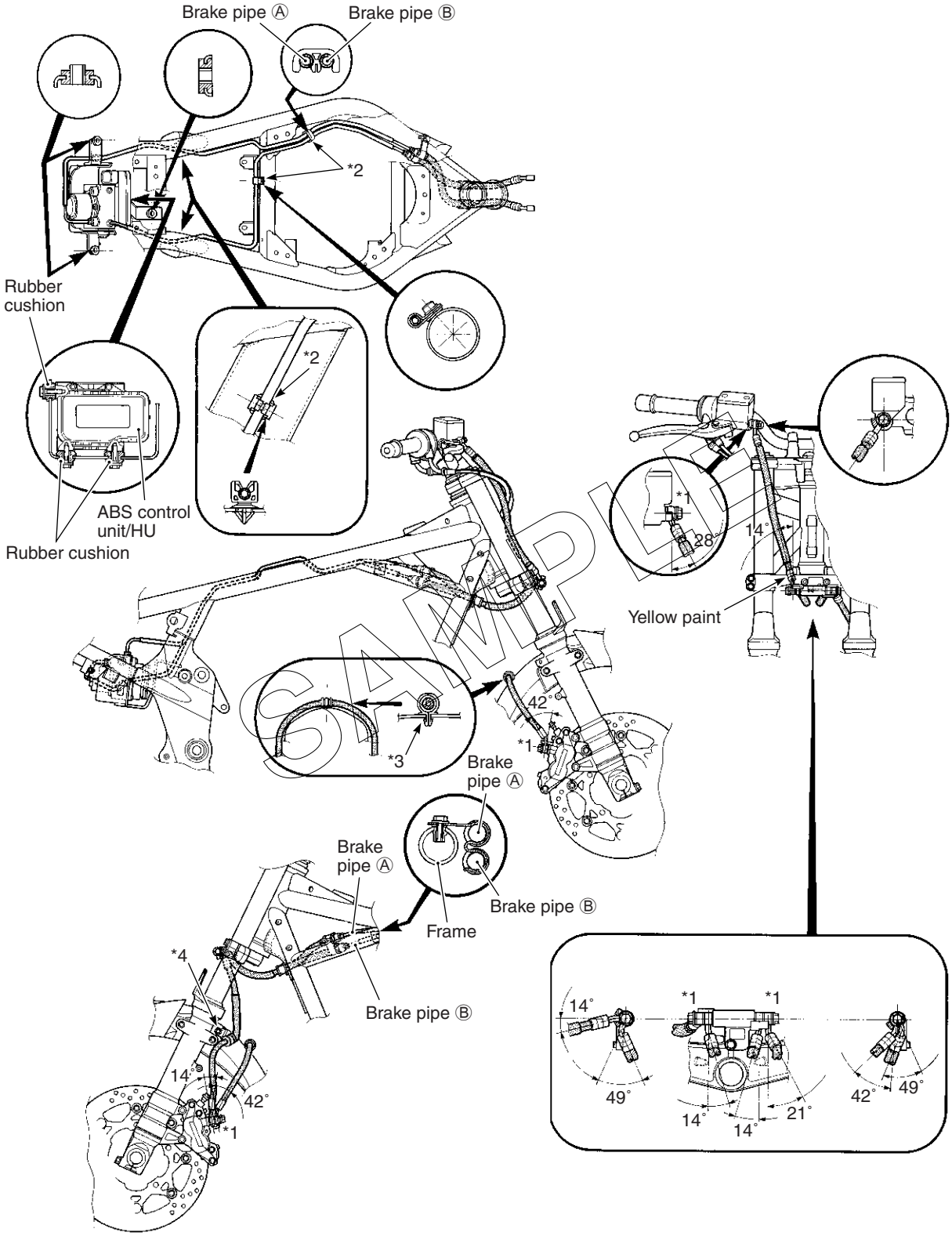


SAMPLE

*1	Cut the tip of wire clamp after clamping.	*2	Check the adhesive lead wire protection seat when servicing.
*3	Don't contact the ABS unit wire harness with the ABS bracket.		

FRONT BRAKE HOSE ROUTING

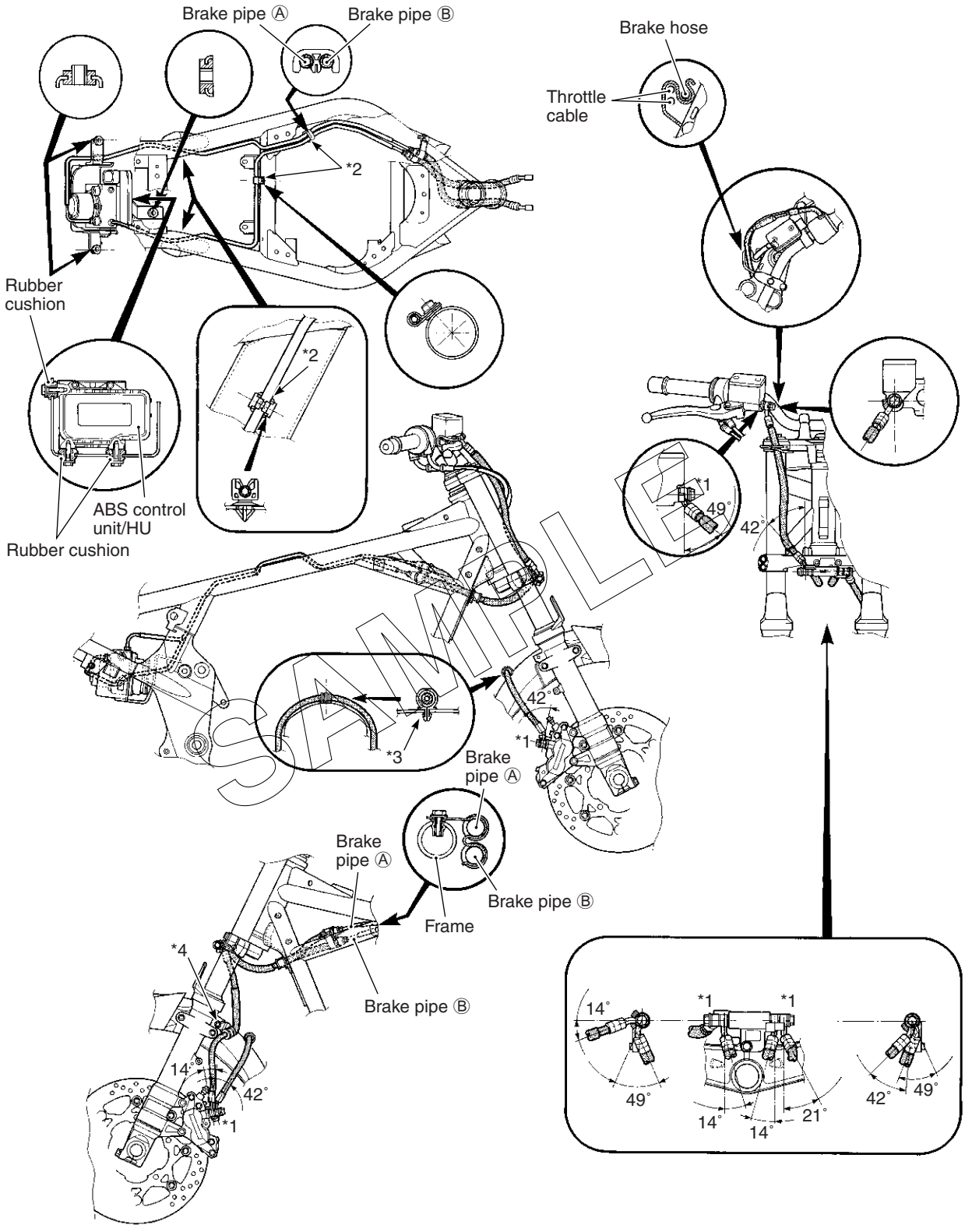
GSF1200A



SAMPLE

*1	After brake hose union has contacted to the stopper, tighten the union bolt.	*3	Insert the brake hose clamp to the hole of front fender properly.
*2	Clamp white paint part of brake pipe.	*4	Set the clamp with stopper before tightening.

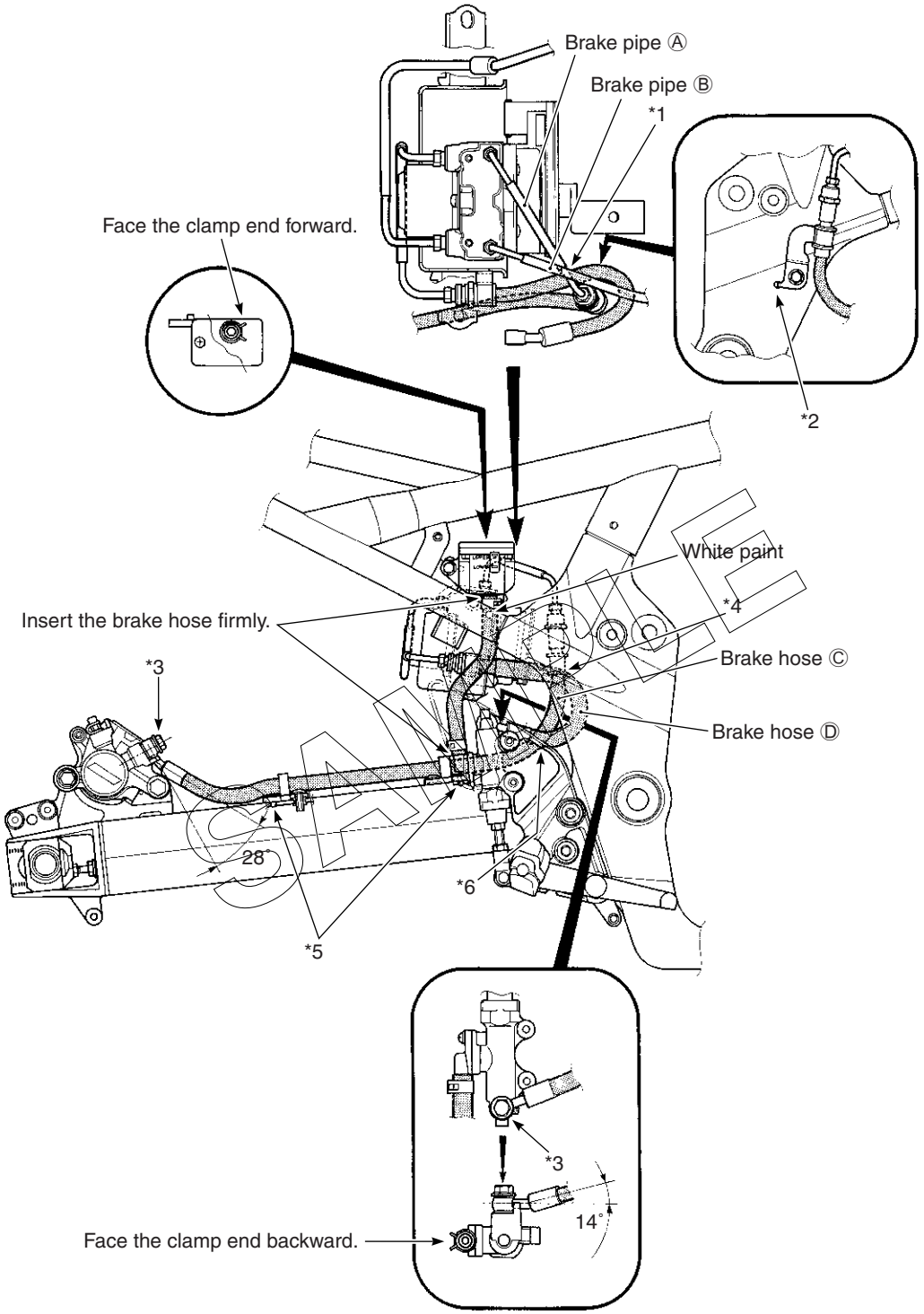
GSF1200SA



SAMPLE

*1	After brake hose union has contacted to the stopper, tighten the union bolt.	*3	Insert the brake hose clamp to the hole of front fender properly.
*2	Clamp white paint part of brake pipe.	*4	Set the clamp with stopper before tightening.

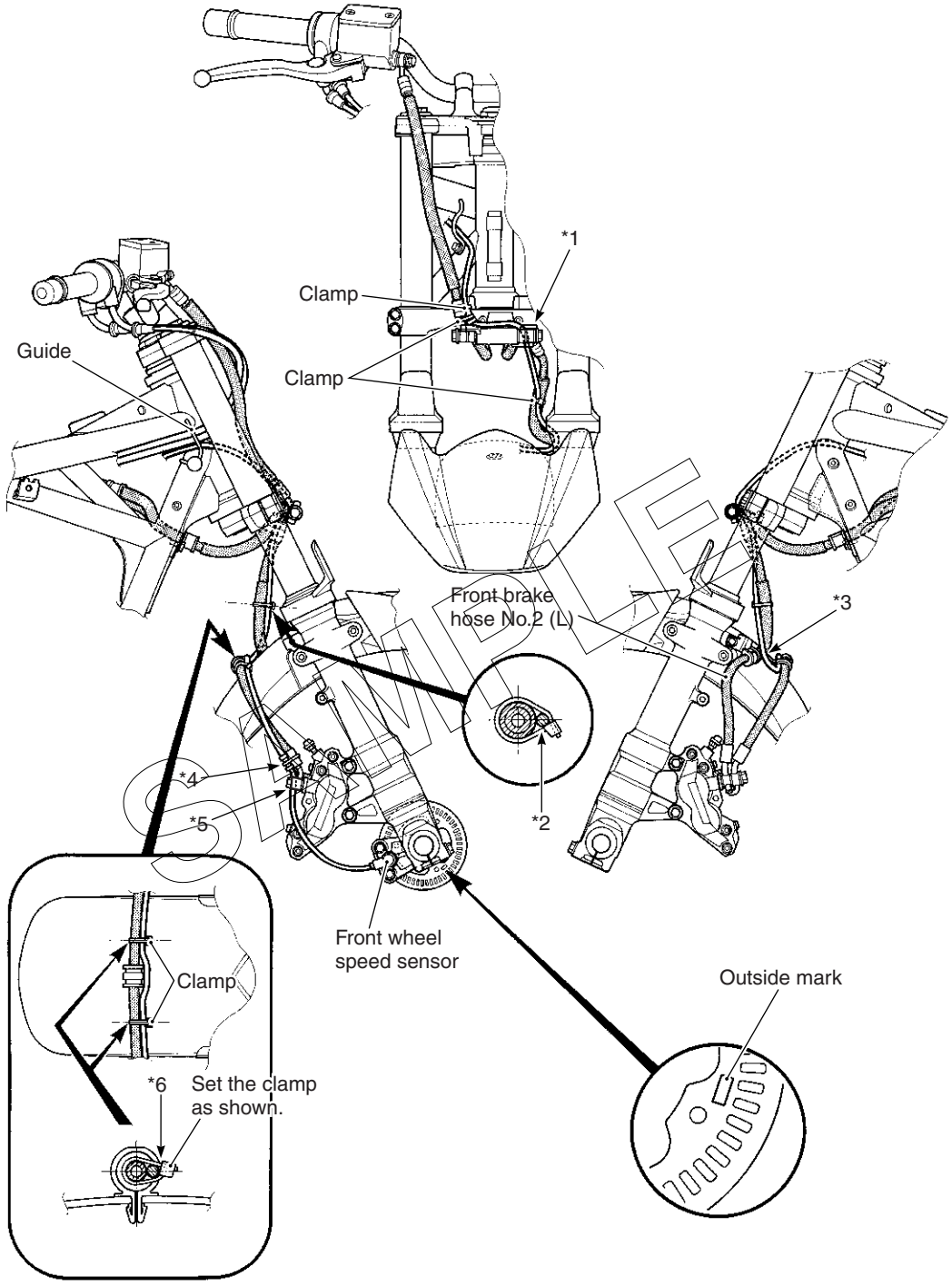
REAR BRAKE HOSE ROUTING



*1	Pass through the brake pipe Ⓐ under the brake pipe Ⓑ.	*4	Pass through the brake hose Ⓒ outside of the brake hose Ⓓ.
*2	Set the clamp to the hole of frame before tightening.	*5	Set the clamp to the hole of swingarm before tightening.
*3	After the brake hose union has contacted to the stopper, tighten the union bolt.	*6	Pass through the brake hose Ⓓ outside of the brake hose Ⓒ.

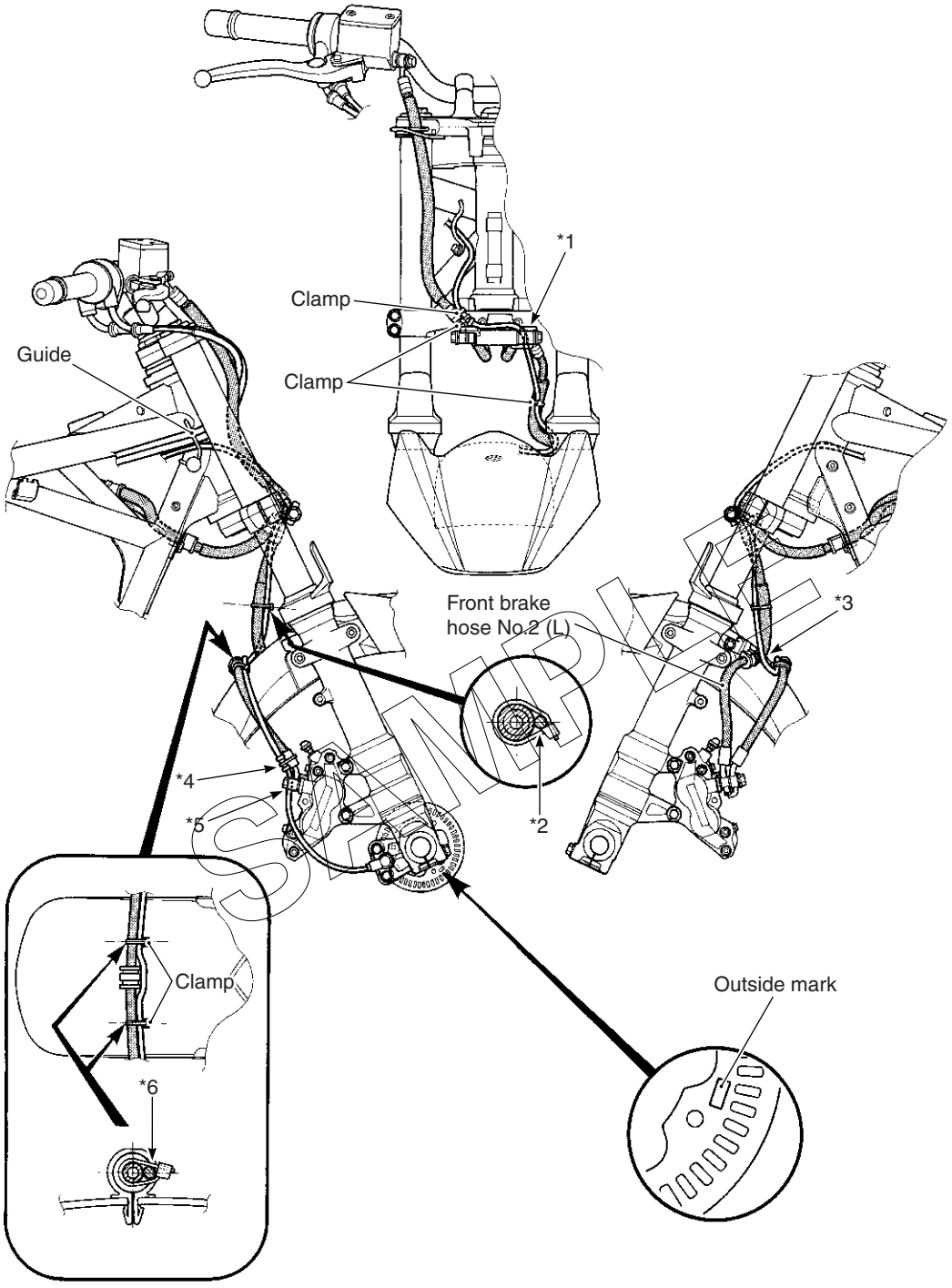
FRONT WHEEL SPEED SENSOR INSTALLATION

GSF1200A



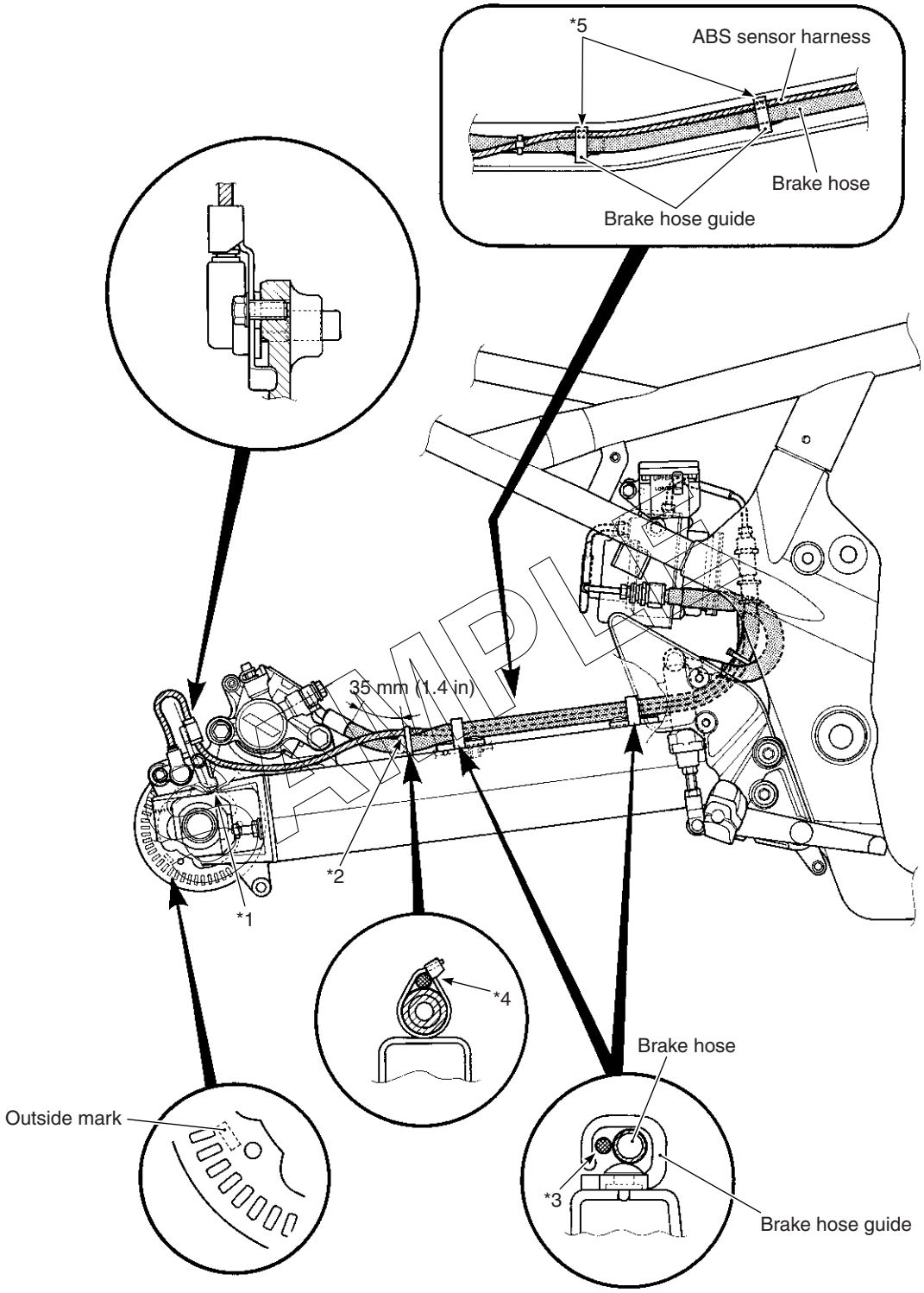
*1	Pass through the sensor lead wire between brake hose No.2 and brake hose No.2 (L).	*4	Clamp the sensor lead wire sleeve with the brake hose.
*2	Pass through the sensor lead wire in front of the brake hose.	*5	Pass through the sensor lead wire inside of the brake hose.
*3	Pass through the sensor lead wire outside of the brake hose.	*6	Pass through the sensor lead wire in front of the brake hose.

GSF1200SA



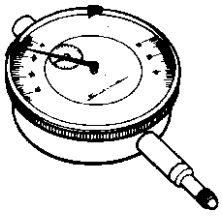
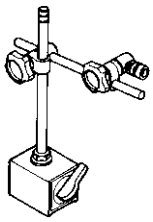
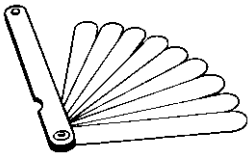
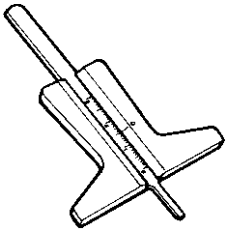
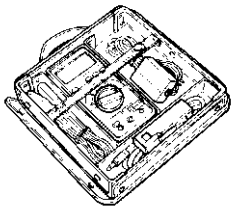
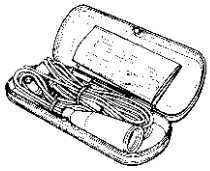
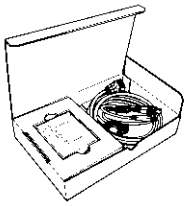
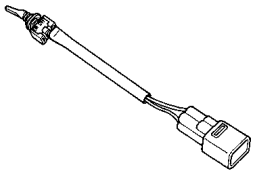
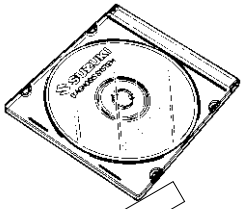
*1	Pass through the sensor lead wire between brake hose No.2 and brake hose No.2 (L).	*4	Clamp the sensor lead wire sleeve with the brake hose.
*2	Pass through the sensor lead wire in front of the brake hose.	*5	Pass through the sensor lead wire inside of the brake hose.
*3	Pass through the sensor lead wire outside of the brake hose.	*6	Pass through the sensor lead wire in front of the brake hose.

REAR WHEEL SPEED SENSOR INSTALLATION



*1	After the clamp has contacted to the stopper, tighten the bolt.	*4	Pass through the sensor lead wire on the brake hose.
*2	Clamp sensor lead wire with white tape matched green paint of brake hose.	*5	Pass through the sensor lead wire inside of the brake hose.
*3	Pass through the sensor lead wire inside of the brake hose guide.		

SPECIAL TOOLS

 **09900-20602 Dial gauge**	 **09900-20701 Magnetic stand**	 **09900-20803 09900-20806 Thickness gauge**	 **09900-20805 Tire depth gauge**	 **09900-25008 Multi-circuit tester set**
 **09900-25009 Needle pointed probe set**	 **09904-41010 SDS set tool**	 **09930-82710 Mode select switch**	 **99565-01010-008 CD-ROM Ver. 8**	

NOTE:
When order the special tool, please confirm whether it is available or not.

TIGHTENING TORQUE

ITEM	N·m	kgf-m	lb-ft
Brake pipe flare nut	16	1.6	11.5

SAMPLE

SERVICE DATA

VALVE + GUIDE

Unit: mm (in)

ITEM	STANDARD		LIMIT
Valve diameter	IN.	28.5 (1.12)	—
	EX.	25 (1.0)	—
Valve clearance (when cold)	IN.	0.10 – 0.15 (0.004 – 0.006)	—
	EX.	0.18 – 0.23 (0.007 – 0.009)	—
Valve-guide to valve-stem clearance	IN.	0.020 – 0.047 (0.0008 – 0.0019)	—
	EX.	0.016 – 0.067 (0.0016 – 0.0026)	—
Valve stem deflection	IN. & EX.	—	0.35 (0.014)
Valve guide I.D.	IN. & EX.	5.000 – 5.012 (0.1969 – 0.1973)	—
Valve stem O.D.	IN.	4.965 – 4.980 (0.1955 – 0.1961)	—
	EX.	4.945 – 4.960 (0.1947 – 0.1953)	—
Valve stem runout	IN. & EX.	—	0.05 (0.002)
Valve face thickness	IN. & EX.	—	0.5 (0.02)
Valve stem end length	IN. & EX.	—	2.5 (0.10)
Valve seat width	IN. & EX.	0.9 – 1.1 (0.035 – 0.043)	—
Valve head radial runout	IN. & EX.	—	0.03 (0.001)
Valve spring free length (IN. & EX.)	INNER	—	35.0 (1.38)
	OUTER	—	37.8 (1.49)
Valve spring tension (IN. & EX.)	INNER	53 – 65 N (5.3 – 6.5 kgf, 11.7 – 14.3 lbs) at length 28 mm (1.10 in)	—
	OUTER	131 – 151 N (13.1 – 15.1 kgf, 28.9 – 33.3) at length 31.5 mm (1.24 in)	—

SAMPLE

CAMSHAFT + CYLINDER HEAD

Unit: mm (in)

ITEM	STANDARD		LIMIT
Cam height	IN.	33.58 – 33.62 (1.3220 – 1.3236)	33.28 (1.3102)
	EX.	32.65 – 32.69 (1.2854 – 1.2870)	32.35 (1.2736)
Camshaft journal oil clearance	IN. & EX.	0.032 – 0.066 (0.0013 – 0.0026)	0.150 (0.0059)
Camshaft journal holder I.D.	IN. & EX.	22.012 – 22.025 (0.8666 – 0.8671)	—
Camshaft journal O.D.	IN. & EX.	21.959 – 21.980 (0.8645 – 0.8654)	—
Camshaft runout	IN. & EX.	—	0.10 (0.004)
Cam chain pin (at arrow "3")	24th pin		—
Rocker arm I.D.	IN. & EX.	12.000 – 12.018 (0.4724 – 0.4731)	—
Rocker arm shaft O.D.	IN. & EX.	11.973 – 11.984 (0.4714 – 0.4718)	—
Cylinder head distortion	—		0.20 (0.008)

CYLINDER + PISTON + PISTON RING

Unit: mm (in)

ITEM	STANDARD			LIMIT
Compression pressure	1 250 kPa (12.5 kgf/cm², 178 psi)			875 kPa (8.75 kgf/cm², 124 psi)
Compression pressure difference	—			200 kPa (2 kgf/cm², 28 psi)
Piston-to-cylinder clearance	0.050 – 0.060 (0.0020 – 0.0024)			0.120 (0.0047)
Cylinder bore	79.000 – 79.015 (3.1102 – 3.1108)			79.080 (3.1134)
Piston diameter	78.945 – 78.960 (3.1081 – 3.1087) Measure 15 mm (0.6 in) from the skirt end.			78.880 (3.1055)
Cylinder distortion	—			0.20 (0.008)
Piston ring free end gap	1st	N	Approx. 10 (0.39)	8.0 (0.31)
	2nd	2N	Approx. 9.5 (0.37)	7.6 (0.30)
Piston ring end gap	1st		0.15 – 0.30 (0.006 – 0.012)	0.5 (0.02)
	2nd		0.30 – 0.45 (0.012 – 0.018)	0.7 (0.028)

SAMPLE

ITEM	STANDARD		LIMIT
Piston-ring to piston-ring-groove clearance	1st	—	0.180 (0.007)
	2nd	—	0.150 (0.006)
Piston ring groove width	1st	1.01 – 1.03 (0.040 – 0.041)	—
	2nd	1.01 – 1.03 (0.040 – 0.041)	—
	Oil	2.01 – 2.03 (0.079 – 0.080)	—
Piston ring thickness	1st	0.975 – 0.990 (0.0384 – 0.0390)	—
	2nd	0.970 – 0.990 (0.038 – 0.039)	—
Piston pin bore	20.002 – 20.008 (0.7875 – 0.7877)		20.030 (0.7886)
Piston pin O.D.	19.992 – 20.000 (0.7871 – 0.7874)		19.980 (0.7866)

CONROD + CRANKSHAFT

Unit: mm (in)

ITEM	STANDARD		LIMIT
Conrod small end I.D.	20.010 – 20.018 (0.7878 – 0.7881)		20.040 (0.7890)
Conrod big end side clearance	0.10 – 0.20 (0.004 – 0.008)		0.30 (0.012)
Conrod big end width	20.95 – 21.00 (0.825 – 0.827)		—
Crank pin width	21.10 – 21.15 (0.831 – 0.833)		—
Conrod big end oil clearance	0.032 – 0.056 (0.0013 – 0.0022)		0.080 (0.0031)
Crank pin O.D.	37.976 – 38.000 (1.4951 – 1.4961)		—
Crankshaft journal oil clearance	0.020 – 0.044 (0.0008 – 0.0017)		0.080 (0.0031)
Crankshaft journal O.D.	35.976 – 36.000 (1.4164 – 1.4173)		—
Crankshaft thrust clearance	0.04 – 0.08 (0.0016 – 0.0031)		—
Crankshaft thrust bearing thickness	Left side	2.360 – 2.520 (0.0929 – 0.0992)	—
	Right side	2.420 – 2.440 (0.0953 – 0.0961)	—
Crankshaft runout	—		0.05 (0.002)

SAMPLE

OIL PUMP

ITEM	STANDARD	LIMIT
Oil pump reduction ratio	1.703 (72/46 × 37/34)	—
Oil pressure (at 60 °C, 140 °F)	Above 300 kPa (3.0 kgf/cm², 43 psi) Below 600 kPa (6.0 kgf/cm², 85 psi) at 3 000 r/min	—

CLUTCH

Unit: mm (in)

ITEM	STANDARD	LIMIT
Clutch drive plate thickness	2.92 – 3.08 (0.115 – 0.121)	2.62 (0.103)
Clutch drive plate claw width	—	13.0 (0.51)
Clutch driven plate distortion	—	0.10 (0.004)
Clutch spring free height	—	3.1 (0.12)
Clutch master cylinder bore	14.000 – 14.043 (0.5511 – 0.5529)	—
Clutch master cylinder piston diam.	13.957 – 13.984 (0.5495 – 0.5506)	—
Clutch release cylinder bore	38.18 – 38.23 (1.503 – 1.505)	—
Clutch release cylinder piston diam.	38.08 – 38.13 (1.500 – 1.501)	—

TRANSMISSION + DRIVE CHAIN

Unit: mm (in) Except ratio

ITEM		STANDARD		LIMIT
Primary reduction ratio		1.565 (72/46)		—
Final reduction ratio		3.000 (45/15)		—
Gear ratios	1st (low)	2.384 (31/13)		—
	2nd	1.631 (31/19)		—
	3rd	1.250 (25/20)		—
	4th	1.045 (23/22)		—
	5th (top)	0.913 (21/23)		—
Gearshift-fork to gearshift-fork-groove clearance		No.1, No.2 & No.3	0.1 – 0.3 (0.004 – 0.012)	0.50 (0.020)
Gearshift fork groove width		No.1, No.2 & No.3	5.0 – 5.1 (0.197 – 0.201)	—
Gearshift fork thickness		No.1, No.2 & No.3	4.8 – 4.9 (0.189 – 0.193)	—
Drive chain		Type	RK GB50GSVZ3	—
		Links	116 links	—
		20-pitch length	—	319.4 (12.57)
Drive chain slack		20 – 30 (0.8 – 1.2)		—
Gearshift lever height		55 (2.2)		—

SAMPLE

CARBURETOR

ITEM	SPECIFICATION	
	E-02, 19, 24	E-28
Carburetor type	MIKUNI BSR36	←
Bore size	36 mm (1.42 in)	←
I.D. No.	49G0	49G1
Idle r/min	1 200 ± 100 r/min	1 300 ± 100 r/min
Float height	13.0 ± 1.0 mm (0.51 ± 0.04 in)	←
Main jet (M.J.)	# 100	←
Jet needle (J.N.)	5C70-3rd	5C71-1st
Needle jet (N.J.)	P-0M	←
Throttle valve (Th. V.)	#100	←
Pilot jet (P.J.)	# 15	←
Pilot screw (P.S.)	PRE-SET (3-1/2 turns back)	←
Throttle cable play (pulling cable)	2.0 – 4.0 mm (0.08 – 0.16 in)	←
Starter (enricher) plunger cable play	0.5 – 1.0 mm (0.02 – 0.04 in)	←

ELECTRICAL

Unit: mm (in)

ITEM	SPECIFICATION		NOTE
Ignition timing	7° B.T.D.C. at 1 300 r/min		E-28
	7° B.T.D.C. at 1 200 r/min		Others
Firing order	1•2•4•3		
Spark plug	Type	NGK: JR9B	
	Gap	0.6 – 0.7 (0.024 – 0.028)	
Spark performance	Over 8 (0.3) at 1 atm.		
Pickup coil resistance	Approx. 130 – 200 Ω		Tester range: (× 100 Ω)
Signal generator peak voltage	1.0 V and more		
Ignition coil resistance	Primary	⊕ tap – ⊖ tap Approx. 2 – 4 Ω	Tester range: (× 1 Ω)
	Secondary	Spark plug cap – Spark plug cap Approx. 30 – 40 kΩ	Tester range: (× 1 kΩ)
Ignition coil primary peak voltage	140 V and more		
Generator	Slip ring O.D.	Limit: 14.0 (0.55)	DENSO
	Brush length	Limit: 4.5 (0.18)	
Generator maximum output	More than 550 W at 5 000 r/min		
Starter motor brush length	Standard	12.5 (0.49)	
	Limit	6.0 (0.24)	
Regulated voltage	13.5 – 15 V at 5 000 r/min		
Starter relay resistance	3 – 6 Ω		

SAMPLE

ITEM			SPECIFICATION	NOTE
Battery	Type designation		FT12A-BS	
	Capacity		12 V 36.0 kC (10 Ah)/10 HR	
	Standard electrolyte S.G.		1.320 at 20 °C (68 °F)	
Fuse size	Headlight	HI	10 A	
		LO	10 A	
	Ignition		15 A	
	Signal		15 A	
	Meter		10 A	
	Main		30 A	
	ABS		* 15 A	
	ABS motor		* 20 A	

WATTAGE

Unit: W

ITEM		SPECIFICATION	
		GSF1200A	GSF1200SA
Headlight	HI	60	55
	LO	55	55
Parking or position light		5	5 × 2
Brake light/Taillight		21/5	←
Turn signal light		21 × 4	←
Speedometer light		LED	←
Tachometer light		LED	←
Turn signal indicator light		LED × 2	←
High beam indicator light		LED	←
Neutral position indicator light		LED	←
Oil pressure indicator light		LED	←
License plate light		5	←
ABS indicator light		* LED	←

SAMPLE

BRAKE + WHEEL

Unit: mm (in)

ITEM	STANDARD			LIMIT
Rear brake pedal height	60 (2.4)			—
Brake disc thickness	Front	4.8 – 5.2 (0.189 – 0.205)		4.5 (0.18)
	Rear	4.8 – 5.2 (0.189 – 0.205)		4.5 (0.18)
Brake disc runout	—			0.30 (0.012)
Master cylinder bore	Front	15.870 – 15.913 (0.6248 – 0.6264)		—
	Rear	14.000 – 14.043 (0.5512 – 0.5529)		—
Master cylinder piston diameter	Front	15.827 – 15.854 (0.6231 – 0.6242)		—
	Rear	13.957 – 13.984 (0.5495 – 0.5506)		—
Brake caliper cylinder bore	Front	Leading	30.230 – 30.306 (1.1902 – 1.1931)	—
		Trailing	33.960 – 34.036 (1.3370 – 1.3400)	—
	Rear	38.18 – 38.23 (1.5031 – 1.5051)		—
Brake caliper piston diameter	Front	Leading	30.150 – 30.200 (1.1870 – 1.1890)	—
		Trailing	33.884 – 33.934 (1.3340 – 1.3360)	—
	Rear	38.08 – 38.13 (1.4992 – 1.5012)		—
Wheel rim runout	Axial	—		2.0 (0.08)
	Radial	—		2.0 (0.08)
Wheel axle runout	Front	—		0.25 (0.010)
	Rear	—		0.25 (0.010)
Wheel rim size	Front	17 M/C × MT3.50		—
	Rear	17 M/C × MT5.50		—

SAMPLE

SUSPENSION

Unit: mm (in)

ITEM	STANDARD			LIMIT
Front fork stroke	130 (5.1)			—
Front fork inner tube O.D.	43 (1.69)			—
Front fork spring free length	391.5 (15.41)			383 (15.08)
Front fork oil level	110 (4.2)			—
Front fork spring adjuster	3rd groove from top			—
Rear shock absorber spring adjuster	4th position			—
Rear shock absorber damping force adjuster	Rebound	GSF1200A	1-1/8 turns out from stiffest position	—
		GSF1200SA	1-1/4 turns out from stiffest position	
Rear wheel travel	136 (5.4)			—
Swingarm pivot shaft runout	—			0.3 (0.01)

TIRE

ITEM	STANDARD		LIMIT
Cold inflation tire pressure (Solo/Dual riding)	Front	250 kPa (2.50 kgf/cm², 36 psi)	—
	Rear	250 kPa (2.50 kgf/cm², 36 psi)	—
Tire size	Front	120/70ZR17M/C (58W)	—
	Rear	180/55ZR17M/C (73W)	—
Tire type	Front	DUNLOP D218F N	—
	Rear	DUNLOP D218N	—
Tire tread depth (Recommended depth)	Front	—	1.6 mm (0.06 in)
	Rear	—	2.0 mm (0.08 in)

SAMPLE

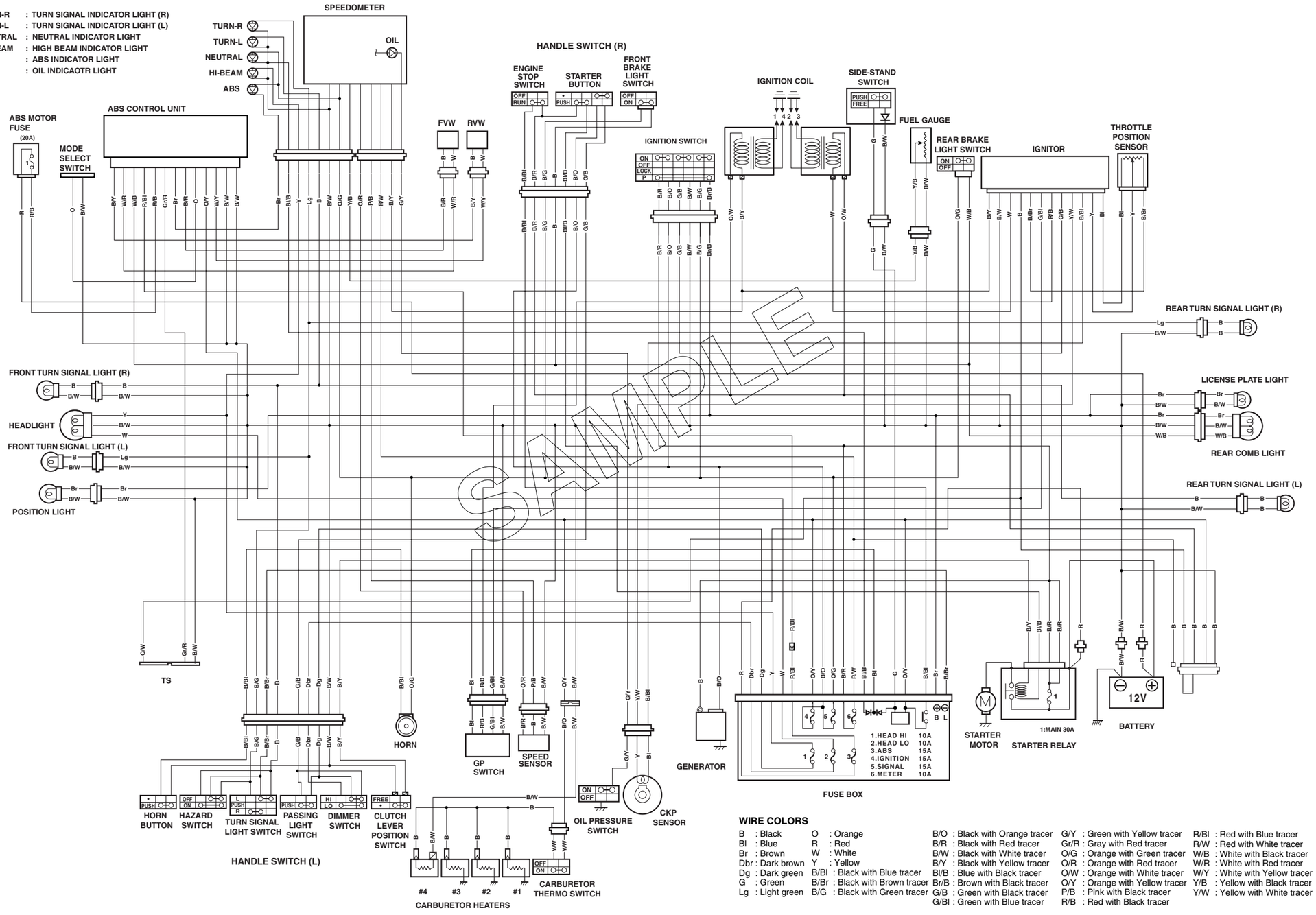
FUEL + OIL

ITEM	SPECIFICATION		NOTE
Fuel type	Use only unleaded gasoline of at least 87 pump octane or 91 octane (R/2 + M/2) or higher rated by the Research Method. Gasoline containing MTBE (Methyl Tertiary Butyl Ether), less than 10% ethanol, or less than 5% methanol with appropriate cosolvents and corrosion inhibitor is permissible.		E-28
	Gasoline used should be graded 91 octane or higher. An unleaded gasoline is recommended.		The other countries
Fuel tank capacity	Including reserve	20 L (5.2/4.4 US/Imp gal)	
	Reserve only	4.4 L (1.2/1.0 US/Imp gal)	
Engine oil type	SAE 10W-40, API SF/SG or SH/SJ with JASO MA		
Engine oil capacity	Change	3 300 ml (3.4/2.9 US/Imp qt)	
	Filter change	3 500 ml (3.6/3.0 US/Imp qt)	
	Overhaul	4 600 ml (4.9/4.0 US/Imp qt)	
Front fork oil type	Fork oil SS-08 or equivalent fork oil		
Front fork oil capacity (each leg)	512 ml (17.3/18.0 US/Imp oz)		
Brake fluid type	DOT 4		

SAMPLE

WIRING DIAGRAM
GSF1200A

TURN-R : TURN SIGNAL INDICATOR LIGHT (R)
TURN-L : TURN SIGNAL INDICATOR LIGHT (L)
NEUTRAL : NEUTRAL INDICATOR LIGHT
HI-BEAM : HIGH BEAM INDICATOR LIGHT
ABS : ABS INDICATOR LIGHT
OIL : OIL INDICAOTR LIGHT



SAMPLE

WIRE COLORS

B : Black	O : Orange	B/O : Black with Orange tracer	G/Y : Green with Yellow tracer	R/Bl : Red with Blue tracer
Bl : Blue	R : Red	B/R : Black with Red tracer	Gr/R : Gray with Red tracer	R/W : Red with White tracer
Br : Brown	W : White	B/W : Black with White tracer	O/G : Orange with Green tracer	W/B : White with Black tracer
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Dg : Dark green	B/Bl : Black with Blue tracer	Bl/B : Blue with Black tracer	O/W : Orange with White tracer	W/Y : White with Yellow tracer
G : Green	B/Br : Black with Brown tracer	Br/B : Brown with Black tracer	O/Y : Orange with Yellow tracer	Y/B : Yellow with Black tracer
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GSF1200SA (E-02, 19)

TURN-R : TURN SIGNAL INDICATOR LIGHT (R)
TURN-L : TURN SIGNAL INDICATOR LIGHT (L)
NEUTRAL : NEUTRAL INDICATOR LIGHT
HI-BEAM : HIGH BEAM INDICATOR LIGHT
ABS : ABS INDICATOR LIGHT
OIL : OIL INDICATOR LIGHT

SPEEDOMETER
TURN-R
TURN-L
NEUTRAL
HI-BEAM
ABS
OIL
ABS MOTOR FUSE
(20A)
ABS CONTROL UNIT
MODE SELECT SWITCH
FVW
RVW
HANDLE SWITCH (R)
ENGINE STOP SWITCH
STARTER BUTTON
FRONT BRAKE LIGHT SWITCH
IGNITION COIL
SIDE-STAND SWITCH
FUEL GAUGE
REAR BRAKE LIGHT SWITCH
IGNITOR
THROTTLE POSITION SENSOR
IGNITION SWITCH
POSITION LIGHT(R)
FRONT TURN SIGNAL LIGHT (R)
HEADLIGHT (LO)
HEADLIGHT (HI)
FRONT TURN SIGNAL LIGHT (L)
POSITION LIGHT(L)
REAR TURN SIGNAL LIGHT (R)
LICENSE PLATE LIGHT
REAR COMB LIGHT
REAR TURN SIGNAL LIGHT (L)
TS
HORN
GP SWITCH
SPEED SENSOR
GENERATOR
FUSE BOX
1.HEAD HI 10A
2.HEAD LO 10A
3.ABS 15A
4.IGNITION 15A
5.SIGNAL 15A
6.METER 10A
STARTER MOTOR
STARTER RELAY
1:MAIN 30A
BATTERY
12V
HORN BUTTON
HAZARD SWITCH
TURN SIGNAL LIGHT SWITCH
PASSING LIGHT SWITCH
DIMMER SWITCH
CLUTCH LEVER POSITION SWITCH
HANDLE SWITCH (L)
OIL PRESSURE SWITCH
CKP SENSOR
CARBURETOR THERMO SWITCH
CARBURETOR HEATERS
#4 #3 #2 #1

SAMPLE

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GSF1200SA (E-24, 28)

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TURN-L : TURN SIGNAL INDICATOR LIGHT (L)
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HI-BEAM : HIGH BEAM INDICATOR LIGHT
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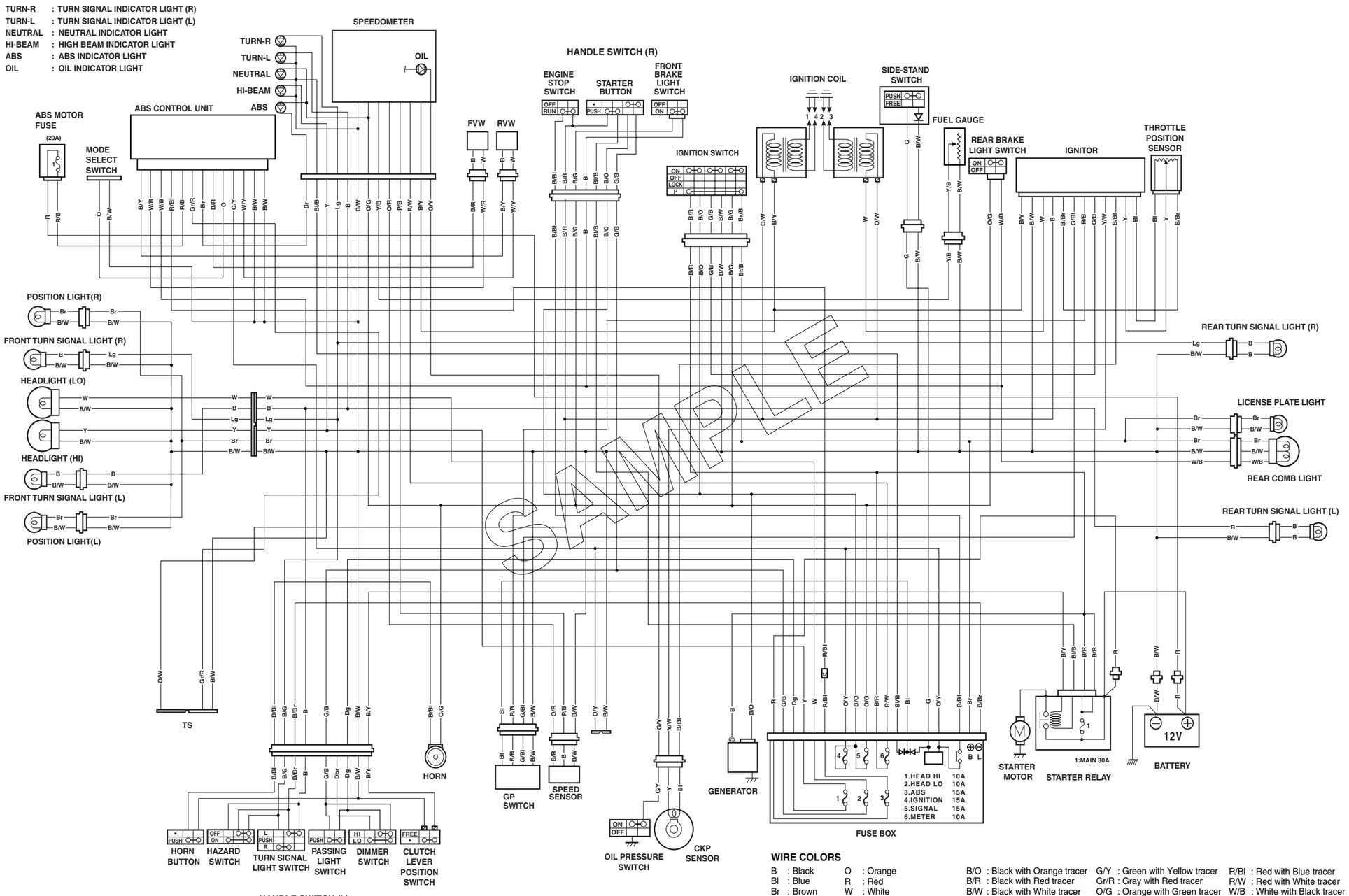
OIL : OIL INDICATOR LIGHT



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Prepared by

SUZUKI MOTOR CORPORATION

February, 2006

Part No. 99501-39570-01E

Printed in Japan

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Printed in Japan TK
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